

SEQUENCE LISTING

<110> Duvick, Jon
Maddox, Joyce
Navarro Acevedo, Pedro
Simmons, Carl R.

<120> Maize Peroxidase Genes and Their Use for
Improving Plant Disease Resistance and Stalk Strength

<130> 35718/242052

<150> US 60/262,595

<151> 2001-01-18

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Ser Cys Cys Met Gln Gly Gly Gly Pro Ala Tyr Lys Leu Pro Leu Gly
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agg cgc gac ggg ctg gcg ccg gca tcg aac gcc gcc gtc cta gcg gcg 155
Arg Arg Asp Gly Leu Ala Pro Ala Ser Asn Ala Ala Val Leu Ala Ala
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ctc cca ccg ccg acg tcc aag gtg ccg acg ctg ctg tcc ttc ctg gcg 203
Leu Pro Pro Pro Thr Ser Lys Val Pro Thr Leu Leu Ser Phe Leu Ala
35 40 45

aag atc aac ctg gac gtg acg gac ctg gtg gcg ctg tcg ggc ggg cac 251
Lys Ile Asn Leu Asp Val Thr Asp Leu Val Ala Leu Ser Gly Gly His
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acg gtg ggc atc gcg cac tgc ggc tcc ttc gac aac cgg ctg ttc ccg 299
Thr Val Gly Ile Ala His Cys Gly Ser Phe Asp Asn Arg Leu Phe Pro
70 75 80

acg cag gac ccg acg ctg aac aag ttc ttc gcg ggg cag ctg tac ccg 347
Thr Gln Asp Pro Thr Leu Asn Lys Phe Phe Ala Gly Gln Leu Tyr Arg

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Asp	Gln	Phe	Val	Tyr	Ser	Tyr	Val	Lys	Met	Gly	Gln	Val	Asn	Val	Leu
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Ala	Ala	Ala	Gly	Asp	Ser	Asp	Leu	Pro	Trp	Ser	Ser	Val	Val	Ile	Glu
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ctc	ctc	tcc	tgt	gtc	gcc	cac	gca	cag	ctc	tcg	ccc	acg	ttc	tat	gcg	156
Leu	Leu	Ser	Cys	Val	Ala	His	Ala	Gln	Leu	Ser	Pro	Thr	Phe	Tyr	Ala	
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tcc	tcc	tgc	ccc	aac	ctg	cag	agc	atc	gtt	cgg	gcg	gcg	atg	acc	cag	204
Ser	Ser	Cys	Pro	Asn	Leu	Gln	Ser	Ile	Val	Arg	Ala	Ala	Met	Thr	Gln	
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Ala	Val	Ala	Ser	Glu	Gln	Arg	Met	Gly	Ala	Ser	Leu	Leu	Arg	Leu	Phe	
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Phe	His	Asp	Cys	Phe	Val	Gln	Gly	Cys	Asp	Gly	Ser	Ile	Leu	Leu	Asp	
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gcc	gga	ggg	gag	aag	acc	gcc	ggg	ccg	aac	ctg	aac	tcg	gtg	cgc	ggc	348
Ala	Gly	Gly	Glu	Lys	Thr	Ala	Gly	Pro	Asn	Leu	Asn	Ser	Val	Arg	Gly	
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Phe	Glu	Val	Ile	Asp	Thr	Ile	Lys	Arg	Asn	Val	Glu	Ala	Ala	Cys	Pro	
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ggc	gtc	gtg	tcg	tgc	gcc	gac	atc	ctc	gcg	ctt	gcc	gcg	cgc	gac	gga	444
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Val	Ile	Asp	Thr	Ile	Lys	Arg	Asn	Val	Glu	Ala	Ala	Cys	Pro	Gly	Val
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Val	Ser	Cys	Ala	Asp	Ile	Leu	Ala	Leu	Ala	Ala	Arg	Asp	Gly	Thr	Asn
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Arg	Cys	Thr	Thr	Phe	Arg	Gly	Arg	Ile	Tyr	Gly	Asp	Thr	Asp	Ile	Asn
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Asp	Gly	Asn	Leu	Ala	Pro	Ile	Asp	Val	Gln	Thr	Pro	Val	Arg	Phe	Asp
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Thr	Ala	Tyr	Phe	Thr	Asn	Leu	Leu	Ser	Arg	Arg	Gly	Leu	Phe	His	Ser
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Asp	Gln	Glu	Leu	Phe	Asn	Gly	Gly	Ser	Gln	Asp	Ala	Leu	Val	Arg	Gln
		260					265					270			
Tyr	Ser	Ala	Ser	Ala	Ser	Leu	Phe	Asn	Ala	Asp	Phe	Val	Ala	Ala	Met
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Ile	Arg	Met	Gly	Asn	Val	Gly	Val	Leu	Thr	Gly	Thr	Ala	Gly	Gln	Ile
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gcc acg gtg acc gtg aat gag ccc atc gcc aat ggc ctc tcc tgg agc	148
Ala Thr Val Thr Val Asn Glu Pro Ile Ala Asn Gly Leu Ser Trp Ser	
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ttc tac gac gtt tcc tgc ccg tcg gtg gag ggc atc gtg cgc tgg cac	196
Phe Tyr Asp Val Ser Cys Pro Ser Val Glu Gly Ile Val Arg Trp His	
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gtc gcc gag gcc ctc cgc cgc gac atc ggc atc gcc gcg ggg ctc atc	244
Val Ala Glu Ala Leu Arg Arg Asp Ile Gly Ile Ala Ala Gly Leu Ile	
60 65 70	
cgc atc ttc ttc cac gac tgc ttc ccg cag ggc tgc gac gcg tcc gtc	292
Arg Ile Phe Phe His Asp Cys Phe Pro Gln Gly Cys Asp Ala Ser Val	
75 80 85	
ctc ctg tct ggt tcc aac agc gag cag atc gag gta ccc aac cag acg	340
Leu Leu Ser Gly Ser Asn Ser Glu Gln Ile Glu Val Pro Asn Gln Thr	
90 95 100	
ctg cgt ccc gag gcg ctc aag ctc atc gac gac atc cgc gcc gcc gtc	388
Leu Arg Pro Glu Ala Leu Lys Leu Ile Asp Asp Ile Arg Ala Ala Val	
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cac gcc gtc tgc ggg ccc acg gtg tcc tgc gcc gac atc aca acg ctc	436
His Ala Val Cys Gly Pro Thr Val Ser Cys Ala Asp Ile Thr Thr Leu	
125 130 135	
gcc acc agg gac gcc gtc gtc gcg tcc ggc ggc ccc ttc ttc gag gtt	484
Ala Thr Arg Asp Ala Val Val Ala Ser Gly Gly Pro Phe Phe Glu Val	
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cct ctc ggg cgg cgc gac ggt ctg gcg ccg gcg tca agc gac ctg gtg	532
Pro Leu Gly Arg Arg Asp Gly Leu Ala Pro Ala Ser Ser Asp Leu Val	
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Gly Thr Leu Pro Ala Pro Phe Phe Asp Val Pro Thr Leu Ile Glu Ser	
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Phe Lys Asn Arg Ser Leu Asp Lys Ala Asp Leu Val Ala Leu Ser Gly	
185 190 195 200	
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Ala His Thr Val Gly Arg Gly His Cys Val Ser Phe Ser Asp Arg Leu	
205 210 215	

ccg ccc aac gcg gac gat ggc acc atg gac ccg gcg ttc cgg cag agg	724
Pro Pro Asn Ala Asp Asp Gly Thr Met Asp Pro Ala Phe Arg Gln Arg	
220 225 230	
ctg acg gcc aag tgc gcc agc gac ccc agc ggg aac gtg gtg acc cag	772
Leu Thr Ala Lys Cys Ala Ser Asp Pro Ser Gly Asn Val Val Thr Gln	
235 240 245	
gtg ctg gac gtg cgc acg ccc aac gcc ttc gac aac aag tac tac ttc	820
Val Leu Asp Val Arg Thr Pro Asn Ala Phe Asp Asn Lys Tyr Tyr Phe	
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gac ctt atc gcc aag cag ggg ctc ttc aag tcg gac cag ggc ctc atc	868
Asp Leu Ile Ala Lys Gln Gly Leu Phe Lys Ser Asp Gln Gly Leu Ile	
265 270 275 280	
aac cac ccg gac acc aag cgc gcg gcc acc cgc ttc gcg ctc aac cag	916
Asn His Pro Asp Thr Lys Arg Ala Ala Thr Arg Phe Ala Leu Asn Gln	
285 290 295	
gcc gcc ttc ttc gac cag ttc gcc agg tcc atg gtg aag atg agc cag	964
Ala Ala Phe Phe Asp Gln Phe Ala Arg Ser Met Val Lys Met Ser Gln	
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Met Asp Ile Leu Thr Gly Ser Ala Gly Glu Ile Arg Arg Asn Cys Ser	
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Val Arg Asn Thr Ala Leu Gly Asp Val Ser Ser Ser Ala Gln Leu Glu	
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Thr Thr Ala Gly Asp Glu Gly Leu Ala Ala Asp Ala *	
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 Val Glu Gly Ile Val Arg Trp His Val Ala Glu Ala Leu Arg Arg Asp
 50 55 60
 Ile Gly Ile Ala Ala Gly Leu Ile Arg Ile Phe Phe His Asp Cys Phe
 65 70 75 80
 Pro Gln Gly Cys Asp Ala Ser Val Leu Leu Ser Gly Ser Asn Ser Glu

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Leu Ala Ala Ser Ser Ala Ala His Gly Tyr Gly Tyr Gly Tyr Gly Gly	
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gac gcc gag gcc gtc gtc cgc agg atc gtc gcc aag gcc gtc cgc gag	364
Asp Ala Glu Ala Val Val Arg Arg Ile Val Ala Lys Ala Val Arg Glu	
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gac ccc acg gcc aac gcg ccg ctg ctc agg ctc cac ttc cac gac tgc	412
Asp Pro Thr Ala Asn Ala Pro Leu Leu Arg Leu His Phe His Asp Cys	
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Phe Val Arg Gly Cys Asp Gly Ser Val Leu Val Asn Ser Thr Arg Gly	
90 95 100 105	
aac acg gcg gag aag gac gcc aag ccc aac cac acg ctg gac gcc ttc	508
Asn Thr Ala Glu Lys Asp Ala Lys Pro Asn His Thr Leu Asp Ala Phe	
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Asp Val Ile Asp Asp Ile Lys Glu Ala Leu Glu Lys Arg Cys Pro Gly	
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Thr Val Ser Cys Ala Asp Ile Leu Ala Ile Ala Ala Arg Asp Ala Val	
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tct ctg gcc acc aag gtg gtc acc aag ggc ggc tgg agc agg gac ggc	652
Ser Leu Ala Thr Lys Val Val Thr Lys Gly Gly Trp Ser Arg Asp Gly	
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aac ctc tac cag gtg gag acc ggc agg cgg gac gcc cgc gtg tcc aga	700
Asn Leu Tyr Gln Val Glu Thr Gly Arg Arg Asp Gly Arg Val Ser Arg	
170 175 180 185	
gcc aag gag gcc gtc aag aac ttg ccg gac tcc atg gat gcc atc cgc	748
Ala Lys Glu Ala Val Lys Asn Leu Pro Asp Ser Met Asp Gly Ile Arg	
190 195 200	
aag ctc atc agg agg ttc gct tcc aag aac ctc agc gtc aag gat ctc	796
Lys Leu Ile Arg Arg Phe Ala Ser Lys Asn Leu Ser Val Lys Asp Leu	
205 210 215	
gct gtt ctc tca ggc gcc cac gcg atc ggc aaa tct cac tgc ccg tct	844
Ala Val Leu Ser Gly Ala His Ala Ile Gly Lys Ser His Cys Pro Ser	
220 225 230	
atc gcc aag cgg ctg cgc aac ttc acg gcg cac cgg gac agc gac ccg	892
Ile Ala Lys Arg Leu Arg Asn Phe Thr Ala His Arg Asp Ser Asp Pro	
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Arg	Arg	Asp	Asn	Thr	Thr	Glu	Leu	Glu	Met	Val	Pro	Gly	Ser	Ser	Thr	
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gcg	ttc	ggc	acg	gcc	tac	tac	ggc	ctg	gtc	gcg	gag	cgg	agg	gcg	ctc	1036
Ala	Phe	Gly	Thr	Ala	Tyr	Tyr	Gly	Leu	Val	Ala	Glu	Arg	Arg	Ala	Leu	
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ttc	cac	tcc	gac	gag	gcg	ctg	ctc	agg	aac	ggg	gag	acc	agg	gcg	ctc	1084
Phe	His	Ser	Asp	Glu	Ala	Leu	Leu	Arg	Asn	Gly	Glu	Thr	Arg	Ala	Leu	
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Val	Tyr	Arg	Tyr	Arg	Asp	Ala	Pro	Ser	Glu	Ala	Pro	Phe	Leu	Ala	Asp	
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ttc	ggg	gcg	tcc	atg	ctc	aac	atg	ggc	agg	gtg	ggc	gtg	ctc	acc	ggc	1180
Phe	Gly	Ala	Ser	Met	Leu	Asn	Met	Gly	Arg	Val	Gly	Val	Leu	Thr	Gly	
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 35 40 45
 Val Gly Phe Tyr Lys Asp Ser Cys Pro Asp Ala Glu Ala Val Val Arg
 50 55 60
 Arg Ile Val Ala Lys Ala Val Arg Glu Asp Pro Thr Ala Asn Ala Pro
 65 70 75 80
 Leu Leu Arg Leu His Phe His Asp Cys Phe Val Arg Gly Cys Asp Gly
 85 90 95
 Ser Val Leu Val Asn Ser Thr Arg Gly Asn Thr Ala Glu Lys Asp Ala
 100 105 110
 Lys Pro Asn His Thr Leu Asp Ala Phe Asp Val Ile Asp Asp Ile Lys
 115 120 125
 Glu Ala Leu Glu Lys Arg Cys Pro Gly Thr Val Ser Cys Ala Asp Ile
 130 135 140

Leu Ala Ile Ala Ala Arg Asp Ala Val Ser Leu Ala Thr Lys Val Val
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 Thr Lys Gly Gly Trp Ser Arg Asp Gly Asn Leu Tyr Gln Val Glu Thr
 165 170 175
 Gly Arg Arg Asp Gly Arg Val Ser Arg Ala Lys Glu Ala Val Lys Asn
 180 185 190
 Leu Pro Asp Ser Met Asp Gly Ile Arg Lys Leu Ile Arg Arg Phe Ala
 195 200 205
 Ser Lys Asn Leu Ser Val Lys Asp Leu Ala Val Leu Ser Gly Ala His
 210 215 220
 Ala Ile Gly Lys Ser His Cys Pro Ser Ile Ala Lys Arg Leu Arg Asn
 225 230 235 240
 Phe Thr Ala His Arg Asp Ser Asp Pro Thr Leu Asp Gly Ala Tyr Ala
 245 250 255
 Ala Glu Leu Arg Arg Gln Cys Arg Ser Arg Arg Asp Asn Thr Thr Glu
 260 265 270
 Leu Glu Met Val Pro Gly Ser Ser Thr Ala Phe Gly Thr Ala Tyr Tyr
 275 280 285
 Gly Leu Val Ala Glu Arg Arg Ala Leu Phe His Ser Asp Glu Ala Leu
 290 295 300
 Leu Arg Asn Gly Glu Thr Arg Ala Leu Val Tyr Arg Tyr Arg Asp Ala
 305 310 315 320
 Pro Ser Glu Ala Pro Phe Leu Ala Asp Phe Gly Ala Ser Met Leu Asn
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 Met Arg Gly Gln Thr Gln Thr
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 Ala Ser Ala Gly Gly Arg Trp Arg Gly Asp Gly Ala Ala Ala Trp Cys
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 Trp Trp Trp Val Ala Val Leu Leu Leu Gly His Leu Pro Ser Cys
 25 30 35

 gcg cgc gcg ggg ctg ctg gag tcc aac ccg ggc ctg gcc tac aac ttc 318
 Ala Arg Ala Gly Leu Leu Glu Ser Asn Pro Gly Leu Ala Tyr Asn Phe
 40 45 50 55

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Tyr Lys Asn Ser Cys Pro Ser Val Asp Ser Ile Val Arg Ser Val Thr	
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tgg gcg cag gtc gcc gcc aac cct gcc ctc ccg gct cgc ctc ctc cgc	414
Trp Ala Gln Val Ala Ala Asn Pro Ala Leu Pro Ala Arg Leu Leu Arg	
75 80 85	
ctc cac ttc cat gac tgc ttc gtc aag ggc tgc gac gcg tcg atc ctg	462
Leu His Phe His Asp Cys Phe Val Lys Gly Cys Asp Ala Ser Ile Leu	
90 95 100	
ctg gac acc gcg cag agc gag aag acg gcg gcg ccg aac ctg tcg gtg	510
Leu Asp Thr Ala Gln Ser Glu Lys Thr Ala Ala Pro Asn Leu Ser Val	
105 110 115	
ggc ggg tac gag gtg atc gac gcg atc aag gcg cag ctg gag agg gcg	558
Gly Gly Tyr Glu Val Ile Asp Ala Ile Lys Ala Gln Leu Glu Arg Ala	
120 125 130 135	
tgc ccg ggc gtg gtg tcg tgc gcc gac atc gtg gcg ctg gcg gcg cgc	606
Cys Pro Gly Val Val Ser Cys Ala Asp Ile Val Ala Leu Ala Ala Arg	
140 145 150	
gac gcc gtg tcg tac cag ttc aag gcg tcg ctg tgg cag gtg gag acg	654
Asp Ala Val Ser Tyr Gln Phe Lys Ala Ser Leu Trp Gln Val Glu Thr	
155 160 165	
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Gly Arg Arg Asp Gly Thr Val Ser Leu Ala Ser Asn Thr Gly Ala Leu	
170 175 180	
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Pro Ser Pro Phe Ala Gly Phe Ala Gly Leu Leu Gln Ser Phe Ser Asp	
185 190 195	
cgg ggg ctg aac ctg acg gac ctc gtg gcg ctg tcg ggg gcg cac acc	798
Arg Gly Leu Asn Leu Thr Asp Leu Val Ala Leu Ser Gly Ala His Thr	
200 205 210 215	
atc ggc gtg gca agc tgc tcc agc gtc acc ccg cgc ctg tac cag ggg	846
Ile Gly Val Ala Ser Cys Ser Ser Val Thr Pro Arg Leu Tyr Gln Gly	
220 225 230	
aac gcc agc agc gtg gac ccg ctg ctg gac tcg gcc tac gcg cgg acg	894
Asn Ala Ser Ser Val Asp Pro Leu Leu Asp Ser Ala Tyr Ala Arg Thr	
235 240 245	
ctc atg tcg tcg tgc ccc aac ccg tcg ccg gcg tcg gcc acc gtg gcg	942
Leu Met Ser Ser Cys Pro Asn Pro Ser Pro Ala Ser Ala Thr Val Ala	
250 255 260	
ctg gac ggc ggc acg ccg ttc cgg ttc gac agc agt tac tac tcc agg	990
Leu Asp Gly Gly Thr Pro Phe Arg Phe Asp Ser Ser Tyr Tyr Ser Arg	
265 270 275	

gtg cag cag aag cag ggc acg ctg gcc tcc gac gcc gcg ctg gcg cag 1038
 Val Gln Gln Lys Gln Gly Thr Leu Ala Ser Asp Ala Ala Leu Ala Gln
 280 285 290 295

aac gcc gcc gcc gcg cag atg gtg gcc gac ctc acc aac ccc atc aag 1086
 Asn Ala Ala Ala Ala Gln Met Val Ala Asp Leu Thr Asn Pro Ile Lys
 300 305 310

ttc tac gcc gcc ttc tcc atg tcc atg aag aag atg ggc cgc gtc gac 1134
 Phe Tyr Ala Ala Phe Ser Met Ser Met Lys Lys Met Gly Arg Val Asp
 315 320 325

gtg ctc acc ggc gcc aac ggc cag atc agg aag cag tgc cgc cag gtc 1182
 Val Leu Thr Gly Ala Asn Gly Gln Ile Arg Lys Gln Cys Arg Gln Val
 330 335 340

aac acc tcc tga tcaacaaggc ctcacaggga ggggccatgg tttttccctc 1234
 Asn Thr Ser *
 345

ttcgtttcttc tctttttctg caccgcctgg tattattgtt ccatgcaccc gggttcggct 1294
 cggcttcggc tcggcgcgca tcaaatatat ttcgccccg cgccgtgatt gagggccctc 1354
 ctccgacgaa agaaatccat tgctttcttt gttatttata ttagtttact cactgtcctg 1414
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 aaaaaa 1480

<210> 10
 <211> 346
 <212> PRT
 <213> Zea mays

<400> 10
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 35 40 45
 Pro Gly Leu Ala Tyr Asn Phe Tyr Lys Asn Ser Cys Pro Ser Val Asp
 50 55 60
 Ser Ile Val Arg Ser Val Thr Trp Ala Gln Val Ala Ala Asn Pro Ala
 65 70 75 80
 Leu Pro Ala Arg Leu Leu Arg Leu His Phe His Asp Cys Phe Val Lys
 85 90 95
 Gly Cys Asp Ala Ser Ile Leu Leu Asp Thr Ala Gln Ser Glu Lys Thr
 100 105 110
 Ala Ala Pro Asn Leu Ser Val Gly Gly Tyr Glu Val Ile Asp Ala Ile
 115 120 125
 Lys Ala Gln Leu Glu Arg Ala Cys Pro Gly Val Val Ser Cys Ala Asp
 130 135 140
 Ile Val Ala Leu Ala Ala Arg Asp Ala Val Ser Tyr Gln Phe Lys Ala
 145 150 155 160
 Ser Leu Trp Gln Val Glu Thr Gly Arg Arg Asp Gly Thr Val Ser Leu
 165 170 175
 Ala Ser Asn Thr Gly Ala Leu Pro Ser Pro Phe Ala Gly Phe Ala Gly
 180 185 190
 Leu Leu Gln Ser Phe Ser Asp Arg Gly Leu Asn Leu Thr Asp Leu Val

195	200	205
Ala Leu Ser Gly	Ala His Thr Ile Gly Val	Ala Ser Cys Ser Ser Val
210	215	220
Thr Pro Arg Leu Tyr Gln Gly	Asn Ala Ser Ser Val	Asp Pro Leu Leu
225	230	235
Asp Ser Ala Tyr	Ala Arg Thr Leu Met Ser Ser Cys	Pro Asn Pro Ser
245	250	255
Pro Ala Ser Ala Thr Val	Ala Leu Asp Gly Gly Thr	Pro Phe Arg Phe
260	265	270
Asp Ser Ser Tyr Tyr Ser Arg	Val Gln Gln Lys Gln Gly Thr	Leu Ala
275	280	285
Ser Asp Ala Ala Leu Ala	Gln Asn Ala Ala Ala	Gln Met Val Ala
290	295	300
Asp Leu Thr Asn Pro Ile Lys Phe Tyr	Ala Ala Phe Ser Met Ser Met	
305	310	315
Lys Lys Met Gly Arg Val Asp Val Leu Thr	Gly Ala Asn Gly Gln Ile	
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Arg Lys Gln Cys Arg Gln Val Asn Thr Ser		
340	345	

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 <212> DNA
 <213> Zea mays

<220>
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Met Gly Arg Tyr Met Leu Ala Pro Val Leu Ala Ala Leu Val Val Ala	
1 5 10 15	
gcc tcc tca tcg gtg gca tca cac gcc tcg ccg ccg ggg aaa ctt gag	155
Ala Ser Ser Ser Val Ala Ser His Ala Ser Pro Pro Gly Lys Leu Glu	
20 25 30	
gtc ggt ttc tac gag cac tcg tgc cca cag gcc gag gac atc gtg cgc	203
Val Gly Phe Tyr Glu His Ser Cys Pro Gln Ala Glu Asp Ile Val Arg	
35 40 45	
aac gcc gtc cgc cgc ggc ata gcc cgc gag ccc ggc gtc ggc gcg ggg	251
Asn Ala Val Arg Arg Gly Ile Ala Arg Glu Pro Gly Val Gly Ala Gly	
50 55 60	
ctc atc cgc atg cac ttc cac gac tgc ttc gtc cgg ggc tgc gac ggc	299
Leu Ile Arg Met His Phe His Asp Cys Phe Val Arg Gly Cys Asp Gly	
65 70 75 80	
tcc atc ctc atc aac tcc acg ccg gac aac aag gcc gag aag gac tcc	347
Ser Ile Leu Ile Asn Ser Thr Pro Asp Asn Lys Ala Glu Lys Asp Ser	
85 90 95	
gtg gcc aac aac ccc agc atg cgt ggc ttc gac gtc gtc gac gac gcc	395

Val	Ala	Asn	Asn	Pro	Ser	Met	Arg	Gly	Phe	Asp	Val	Val	Asp	Asp	Ala		
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aag	gcc	gtc	ctc	gag	gcg	cac	tgc	ccg	cgc	acc	gtc	tcc	tgc	gcc	gac	443	
Lys	Ala	Val	Leu	Glu	Ala	His	Cys	Pro	Arg	Thr	Val	Ser	Cys	Ala	Asp		
		115					120					125					
atc	gtc	gcg	ttc	gca	gcc	cgt	gac	agc	gcc	tac	ctc	gcc	ggc	ggc	ctg	491	
Ile	Val	Ala	Phe	Ala	Ala	Arg	Asp	Ser	Ala	Tyr	Leu	Ala	Gly	Gly	Leu		
		130				135					140						
gac	tac	aag	gtc	ccg	tct	ggc	cgc	cgt	gac	ggc	cgc	gtg	tcc	aaa	gag	539	
Asp	Tyr	Lys	Val	Pro	Ser	Gly	Arg	Arg	Asp	Gly	Arg	Val	Ser	Lys	Glu		
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gat	gag	gtg	ctc	gac	aac	aat	gtc	cct	gcc	ccg	act	gac	gag	gtc	gac	587	
Asp	Glu	Val	Leu	Asp	Asn	Asn	Val	Pro	Ala	Pro	Thr	Asp	Glu	Val	Asp		
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gag	ctc	atc	gag	agc	ttc	aag	cgc	aag	ggg	ctc	aac	gcc	gac	gac	atg	635	
Glu	Leu	Ile	Glu	Ser	Phe	Lys	Arg	Lys	Gly	Leu	Asn	Ala	Asp	Asp	Met		
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Val	Thr	Leu	Ser	Gly	Ala	His	Thr	Ile	Gly	Arg	Ser	His	Cys	Ser	Ser		
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Phe	Thr	Glu	Arg	Leu	Tyr	Asn	Phe	Ser	Gly	Gln	Leu	Gly	Arg	Thr	Asp		
		210				215					220						
ccg	tcc	ctc	gac	cct	gcc	tac	gct	gag	cac	ctc	aag	atg	cgc	tgc	cca	779	
Pro	Ser	Leu	Asp	Pro	Ala	Tyr	Ala	Glu	His	Leu	Lys	Met	Arg	Cys	Pro		
		225			230					235					240		
tgg	ccg	tcc	agc	aac	gac	cag	atg	gac	ccc	acg	gtg	gtg	ccg	ctt	gac	827	
Trp	Pro	Ser	Ser	Asn	Asp	Gln	Met	Asp	Pro	Thr	Val	Val	Pro	Leu	Asp		
				245				250						255			
cca	gtc	acg	ccg	gcg	acc	ttc	gac	aac	cag	tac	tac	aag	aac	gtg	ctg	875	
Pro	Val	Thr	Pro	Ala	Thr	Phe	Asp	Asn	Gln	Tyr	Tyr	Lys	Asn	Val	Leu		
			260					265					270				
gcg	cac	aag	gtc	ctg	ttc	atc	tcc	gac	aac	aca	ctg	ctc	gaa	aac	cca	923	
Ala	His	Lys	Val	Leu	Phe	Ile	Ser	Asp	Asn	Thr	Leu	Leu	Glu	Asn	Pro		
		275					280					285					
tgg	act	gcc	gga	atg	gtc	cac	ttc	aac	gcc	gca	gtc	gag	aag	gca	tgg	971	
Trp	Thr	Ala	Gly	Met	Val	His	Phe	Asn	Ala	Ala	Val	Glu	Lys	Ala	Trp		
		290				295					300						
cag	gtc	aag	ttc	gcc	aag	gcc	atg	gtt	aag	atg	ggc	aag	gtc	cag	gtg	1019	
Gln	Val	Lys	Phe	Ala	Lys	Ala	Met	Val	Lys	Met	Gly	Lys	Val	Gln	Val		
				310					315					320			
ctc	acc	ggc	gac	gag	gga	gag	atc	agg	gag	aag	tgc	ttc	gcc	gtc	aac	1067	
Leu	Thr	Gly	Asp	Glu	Gly	Glu	Ile	Arg	Glu	Lys	Cys	Phe	Ala	Val	Asn		

325

330

335

cca cac tac tag tcgtcaagtt tagctaatta cccgcgaat tatgtttggt
Pro His Tyr *

1119

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1179

1183

<210> 12

<211> 339

<212> PRT

<213> Zea mays

<400> 12

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			20					25					30		
Val	Gly	Phe	Tyr	Glu	His	Ser	Cys	Pro	Gln	Ala	Glu	Asp	Ile	Val	Arg
		35					40					45			
Asn	Ala	Val	Arg	Arg	Gly	Ile	Ala	Arg	Glu	Pro	Gly	Val	Gly	Ala	Gly
	50					55					60				
Leu	Ile	Arg	Met	His	Phe	His	Asp	Cys	Phe	Val	Arg	Gly	Cys	Asp	Gly
65					70					75					80
Ser	Ile	Leu	Ile	Asn	Ser	Thr	Pro	Asp	Asn	Lys	Ala	Glu	Lys	Asp	Ser
				85					90					95	
Val	Ala	Asn	Asn	Pro	Ser	Met	Arg	Gly	Phe	Asp	Val	Val	Asp	Asp	Ala
			100					105					110		
Lys	Ala	Val	Leu	Glu	Ala	His	Cys	Pro	Arg	Thr	Val	Ser	Cys	Ala	Asp
		115					120					125			
Ile	Val	Ala	Phe	Ala	Ala	Arg	Asp	Ser	Ala	Tyr	Leu	Ala	Gly	Gly	Leu
	130					135					140				
Asp	Tyr	Lys	Val	Pro	Ser	Gly	Arg	Arg	Asp	Gly	Arg	Val	Ser	Lys	Glu
145					150					155					160
Asp	Glu	Val	Leu	Asp	Asn	Asn	Val	Pro	Ala	Pro	Thr	Asp	Glu	Val	Asp
			165						170					175	
Glu	Leu	Ile	Glu	Ser	Phe	Lys	Arg	Lys	Gly	Leu	Asn	Ala	Asp	Asp	Met
			180					185					190		
Val	Thr	Leu	Ser	Gly	Ala	His	Thr	Ile	Gly	Arg	Ser	His	Cys	Ser	Ser
		195					200					205			
Phe	Thr	Glu	Arg	Leu	Tyr	Asn	Phe	Ser	Gly	Gln	Leu	Gly	Arg	Thr	Asp
	210					215					220				
Pro	Ser	Leu	Asp	Pro	Ala	Tyr	Ala	Glu	His	Leu	Lys	Met	Arg	Cys	Pro
225					230					235					240
Trp	Pro	Ser	Ser	Asn	Asp	Gln	Met	Asp	Pro	Thr	Val	Val	Pro	Leu	Asp
			245						250					255	
Pro	Val	Thr	Pro	Ala	Thr	Phe	Asp	Asn	Gln	Tyr	Tyr	Lys	Asn	Val	Leu
			260					265					270		
Ala	His	Lys	Val	Leu	Phe	Ile	Ser	Asp	Asn	Thr	Leu	Leu	Glu	Asn	Pro
		275					280					285			
Trp	Thr	Ala	Gly	Met	Val	His	Phe	Asn	Ala	Ala	Val	Glu	Lys	Ala	Trp
	290					295					300				
Gln	Val	Lys	Phe	Ala	Lys	Ala	Met	Val	Lys	Met	Gly	Lys	Val	Gln	Val
305					310					315					320
Leu	Thr	Gly	Asp	Glu	Gly	Glu	Ile	Arg	Glu	Lys	Cys	Phe	Ala	Val	Asn
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<220>  
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<222> (142)...(1185)
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17

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gca	aac	gcg	agc	gct	ctc	atc	cgg	ctc	ttc	gcg	ggg	ctc	aac	ctc	agc	699
Ala	Asn	Ala	Ser	Ala	Leu	Ile	Arg	Leu	Phe	Ala	Gly	Leu	Asn	Leu	Ser	
				175					180					185		
gtc	acc	gac	ctg	gtc	gcg	ctc	tcg	ggc	tcg	cac	tcc	atc	ggc	gag	gcc	747
Val	Thr	Asp	Leu	Val	Ala	Leu	Ser	Gly	Ser	His	Ser	Ile	Gly	Glu	Ala	
			190					195				200				
cgc	tgc	ttc	tcc	atc	gtc	ttc	cgc	ctc	tac	aac	cag	tct	gga	tcc	ggc	795
Arg	Cys	Phe	Ser	Ile	Val	Phe	Arg	Leu	Tyr	Asn	Gln	Ser	Gly	Ser	Gly	
		205					210					215				
cgc	ccc	gac	ccg	cac	atg	gac	acc	gcc	tac	cgc	cgc	tcg	ctc	gac	gca	843
Arg	Pro	Asp	Pro	His	Met	Asp	Thr	Ala	Tyr	Arg	Arg	Ser	Leu	Asp	Ala	
	220					225					230					
ctc	tgc	ccc	aag	ggc	ggc	gac	gag	gag	gtc	acg	gga	ggc	cta	gac	gcc	891
Leu	Cys	Pro	Lys	Gly	Gly	Asp	Glu	Glu	Val	Thr	Gly	Gly	Leu	Asp	Ala	
235				240					245						250	
acc	cca	cgc	gtc	ttc	gac	aac	cag	tac	ttc	gag	gac	ctc	gtc	gcg	ctc	939
Thr	Pro	Arg	Val	Phe	Asp	Asn	Gln	Tyr	Phe	Glu	Asp	Leu	Val	Ala	Leu	
			255					260					265			
cgc	ggc	ttc	ctc	aac	tcc	gac	cag	acg	ctc	ttc	tct	gac	aac	acc	agg	987
Arg	Gly	Phe	Leu	Asn	Ser	Asp	Gln	Thr	Leu	Phe	Ser	Asp	Asn	Thr	Arg	
		270					275					280				
acc	cgt	cgc	gtc	gtc	gag	cgg	ctc	agc	aag	gac	cag	gac	gcc	ttc	ttc	1035
Thr	Arg	Arg	Val	Val	Glu	Arg	Leu	Ser	Lys	Asp	Gln	Asp	Ala	Phe	Phe	
		285					290				295					
agg	gcc	ttc	atc	gag	ggg	atg	ata	aag	atg	ggg	gag	ctc	caa	aac	ccc	1083
Arg	Ala	Phe	Ile	Glu	Gly	Met	Ile	Lys	Met	Gly	Glu	Leu	Gln	Asn	Pro	
	300					305				310						
agg	aaa	ggg	gag	ata	cgg	cgc	aac	tgt	cgc	gtt	gct	aac	aac	tcg	ccg	1131
Arg	Lys	Gly	Glu	Ile	Arg	Arg	Asn	Cys	Arg	Val	Ala	Asn	Asn	Ser	Pro	
315				320					325						330	
tgg	caa	cca	agg	acg	ggg	atg	gcg	tcc	gga	cag	tcg	aca	tct	gag	ctc	1179
Trp	Gln	Pro	Arg	Thr	Gly	Met	Ala	Ser	Gly	Gln	Ser	Thr	Ser	Glu	Leu	
			335				340					345				
cgg	tga	tgaggttggt	gtttcagaag	aaatcgagcc	ctgatatggt	actaatatgt										1235
Arg	*															
tgacatgcat	tggtgttttt	ttggtcgtgt	gtaagtgttg	cacctaccta	tggtgttggt											1295
gcccagctg	cgtcattgc	tgacgtggg	aataattgag	acattgtgcc	ttagctccaa											1355
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<210> 14

<211> 347

<212> PRT
 <213> Zea mays

<400> 14

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Leu	Ala	Ser	Leu	Cys	Arg	Gly	Gln	Ala	Val	Arg	Glu	Leu	Lys	Val	
		20					25					30			
Gly	Tyr	Tyr	Ala	Glu	Thr	Cys	Pro	Glu	Ala	Glu	Asp	Ile	Val	Arg	Glu
		35					40					45			
Thr	Met	Ala	Arg	Ala	Arg	Ala	Arg	Glu	Ala	Arg	Ser	Val	Ala	Ser	Val
	50					55					60				
Met	Arg	Leu	Gln	Phe	His	Asp	Cys	Phe	Val	Asn	Gly	Cys	Asp	Gly	Ser
65					70					75					80
Val	Leu	Met	Asp	Ala	Thr	Pro	Thr	Met	Pro	Gly	Glu	Lys	Asp	Ala	Leu
			85						90					95	
Ser	Asn	Ile	Asn	Ser	Leu	Arg	Ser	Phe	Glu	Val	Val	Asp	Glu	Ile	Lys
			100					105					110		
Asp	Ala	Leu	Glu	Glu	Arg	Cys	Pro	Gly	Val	Val	Ser	Cys	Ala	Asp	Ile
		115					120					125			
Val	Ile	Met	Ala	Ala	Arg	Asp	Ala	Val	Val	Leu	Thr	Gly	Gly	Pro	Asn
	130					135					140				
Trp	Glu	Val	Arg	Leu	Gly	Arg	Glu	Asp	Ser	Met	Thr	Ala	Ser	Gln	Glu
145					150					155					160
Asp	Ala	Asp	Asn	Ile	Met	Pro	Ser	Pro	Arg	Ala	Asn	Ala	Ser	Ala	Leu
			165						170						175
Ile	Arg	Leu	Phe	Ala	Gly	Leu	Asn	Leu	Ser	Val	Thr	Asp	Leu	Val	Ala
		180						185					190		
Leu	Ser	Gly	Ser	His	Ser	Ile	Gly	Glu	Ala	Arg	Cys	Phe	Ser	Ile	Val
		195					200					205			
Phe	Arg	Leu	Tyr	Asn	Gln	Ser	Gly	Ser	Gly	Arg	Pro	Asp	Pro	His	Met
	210					215					220				
Asp	Thr	Ala	Tyr	Arg	Arg	Ser	Leu	Asp	Ala	Leu	Cys	Pro	Lys	Gly	Gly
225					230					235					240
Asp	Glu	Glu	Val	Thr	Gly	Gly	Leu	Asp	Ala	Thr	Pro	Arg	Val	Phe	Asp
				245					250					255	
Asn	Gln	Tyr	Phe	Glu	Asp	Leu	Val	Ala	Leu	Arg	Gly	Phe	Leu	Asn	Ser
		260						265					270		
Asp	Gln	Thr	Leu	Phe	Ser	Asp	Asn	Thr	Arg	Thr	Arg	Arg	Val	Val	Glu
	275						280					285			
Arg	Leu	Ser	Lys	Asp	Gln	Asp	Ala	Phe	Phe	Arg	Ala	Phe	Ile	Glu	Gly
	290					295					300				
Met	Ile	Lys	Met	Gly	Glu	Leu	Gln	Asn	Pro	Arg	Lys	Gly	Glu	Ile	Arg
305				310						315					320
Arg	Asn	Cys	Arg	Val	Ala	Asn	Asn	Ser	Pro	Trp	Gln	Pro	Arg	Thr	Gly
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Met	Ala	Ser	Gly	Gln	Ser	Thr	Ser	Glu	Leu	Arg					
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<210> 15
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 <212> DNA
 <213> Zea mays

<220>
 <221> intron

<222> (315)...(491)

<400> 15

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cgctgacgtt	ctacgacacg	tcgtgcccc	gcgcgatgtc	caccatcagc	agcggcggtg	240
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actgcttcgt	ccaagcaagt	ctagctgtct	cagatgcac	tatctatcta	cttatatata	360
agcatgattt	cctttctagc	tagctagcat	cgctcgtgcat	tttaatttga	agataaaaaga	420
ttagcacgtc	gtatatgcat	gcgattaatt	aaccaggagg	catcatggtg	aaatttctgg	480
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cgaccgggtt	gttccttagc	cagacaagcg	acctccacc	tccgacgtcg	agcctccaag	780
cactgttagc	cgcgtagcag	aagaagaacc	tcgacgcgac	cgacatggtc	gctctctcag	840
gcgctcacac	aatcgggagc	gcccagtgct	cgagcttcaa	cggccacatc	tacaacgaca	900
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gcagcctggc	gcccgtggac	accatgaccc	cgaccgtgtt	cgacaacgac	tactacaaga	1020
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cgcacagcac	ggtcagcaac	tttgctcca	gcttcggccg	ccttcaccag	cgccttcacg	1140
gcggccatgg	tgaagatggg	gaacctcggc	ccgctcaccg	ggaccagtgg	gcagatcagg	1200
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aaacagagat	ctatacgtac	gagtatgtat	aacgacgagt	gatgtttgta	tggatctacg	1380
tatgtaacaa	ggacctctcg	tagcgcaaa	gcgcgcgttg	ggagattaat	taggtacaca	1440
agctattacc	acattatata	tcactctcat	tgtggctaca	tatctatata	tctgaggcca	1500
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<211> 1388

<212> DNA

<213> Zea mays

<220>

<221> CDS

<222> (87)...(1175)

<400> 16

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		Met Ala Thr Ser Ser Gly Ser Cys Leu				
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Ile Ile Ser Leu Leu Val Val Val Val Ala Ala Ala Leu Ser Ala Ser						
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Ser Ala Met Ser Thr Ile Ser Ser Gly Val Asn Ser Ala Val Ala Gln						
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Thr Asp Met Val Ala Leu Ser Gly Ala His Thr Ile Gly Gln Ala Gln	
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Cys Ser Ser Phe Asn Gly His Ile Tyr Asn Asp Thr Asn Ile Asn Ala	
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Tyr Tyr Lys Asn Leu Leu Ser Gln Lys Gly Leu Leu His Ser Asp Gln	
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 Leu Leu Arg Leu His Phe His Asp Cys Phe Val Gln Gly Cys Asp Ala
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 Leu Thr Leu Asn Pro Arg Ala Phe Asp Val Val Asn Ser Ile Lys Ala
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 Thr Val Leu Leu Gly Arg Asp Ser Thr Gly Ser Phe Pro Ser Gln
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Val	Ile	Gly	Gly	Pro	Phe	Trp	Ser	Val	Pro	Thr	Gly	Arg	Arg	Asp	Gly		
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ctc	gcc	gac	ctc	gtc	tgg	ctc	tca	ggg	gct	cac	acg	atc	ggc	atc	tcc	693	
Leu	Ala	Asp	Leu	Val	Trp	Leu	Ser	Gly	Ala	His	Thr	Ile	Gly	Ile	Ser		
180					185					190					195		
caa	tgc	aac	tcc	ttc	agc	gag	cgc	ctg	tac	aac	ttc	acg	ggg	cgc	ggc	741	
Gln	Cys	Asn	Ser	Phe	Ser	Glu	Arg	Leu	Tyr	Asn	Phe	Thr	Gly	Arg	Gly		
				200					205					210			
ggg	ccc	gac	gac	gcg	gac	ccg	tgc	ctg	gac	ccg	ctg	tac	gcc	gcg	aag	789	
Gly	Pro	Asp	Asp	Ala	Asp	Pro	Ser	Leu	Asp	Pro	Leu	Tyr	Ala	Ala	Lys		
			215					220					225				
ttg	cgg	ctc	aag	tgc	aag	acg	ctg	acg	gac	aac	acg	acg	atc	gtg	gag	837	
Leu	Arg	Leu	Lys	Cys	Lys	Thr	Leu	Thr	Asp	Asn	Thr	Thr	Ile	Val	Glu		
		230					235						240				
atg	gac	ccc	ggc	agc	ttc	cgc	acc	ttc	gac	ctg	agc	tac	tac	cgc	ggc	885	
Met	Asp	Pro	Gly	Ser	Phe	Arg	Thr	Phe	Asp	Leu	Ser	Tyr	Tyr	Arg	Gly		
	245					250					255						
gtg	ctc	aag	cgg	cgg	ggc	ctg	ttc	cag	tcc	gac	gcc	gcg	ctc	atc	acc	933	
Val	Leu	Lys	Arg	Arg	Gly	Leu	Phe	Gln	Ser	Asp	Ala	Ala	Leu	Ile	Thr		
260					265					270					275		
gac	gcc	gcc	tcc	aag	gcc	gac	atc	ctc	agc	gtg	atc	aac	gcg	ccg	ccc	981	
Asp	Ala	Ala	Ser	Lys	Ala	Asp	Ile	Leu	Ser	Val	Ile	Asn	Ala	Pro	Pro		
				280					285					290			
gag	gtg	ttc	ttc	cag	gtc	ttc	gcg	ggc	tcc	atg	gtc	aag	atg	ggc	gcc	1029	
Glu	Val	Phe	Phe	Gln	Val	Phe	Ala	Gly	Ser	Met	Val	Lys	Met	Gly	Ala		

295	300	305	
atc gag gtc aag acc ggc tcc gag ggc gag atc agg aag cac tgc gcc			1077
Ile Glu Val Lys Thr Gly Ser Glu Gly Glu Ile Arg Lys His Cys Ala			
310	315	320	
ctc gtc aac aag cac tag gcggcggaat tcatgcggga gatggctcca			1125
Leu Val Asn Lys His *			
325			
ttgctcgcaa aaaaatcctt gtgagacaca caacatgctc tgcattctgca ggcgttgctg			1185
tcaccttggt ggacgtagta catcggtgca tggattatct gttgtttaat ttgtacgttc			1245
agttcattct gtttcttgta ttcttttggt tcctttcctc ttgtttattc atggatgatg			1305
agggtgttct gttttattct ctggttcagc tgtaaccatg taacatgtaa ggtgcgcgtt			1365
ttgtcctcgt gatctctgca actgtattta ttttaatgga tggatatacat ggagatatga			1425
tcatgataat aacaataagg tgattacaaa aaaaaaaaaa aa			1467

<210> 19
<211> 328
<212> PRT
<213> Zea mays

<400> 19
Met Val Arg Arg Thr Val Leu Ala Ala Leu Leu Val Ala Ala Ala Leu
1 5 10 15
Ala Gly Gly Ala Arg Ala Gln Leu Lys Glu Gly Phe Tyr Asp Tyr Ser
20 25 30
Cys Pro Gln Ala Glu Lys Ile Val Lys Asp Tyr Val Lys Ala His Ile
35 40 45
Pro His Ala Pro Asp Val Ala Ser Thr Leu Leu Arg Thr His Phe His
50 55 60
Asp Cys Phe Val Arg Gly Cys Asp Ala Ser Val Leu Leu Asn Ala Thr
65 70 75 80
Gly Gly Ser Glu Ala Glu Lys Asp Ala Ala Pro Asn Leu Thr Leu Arg
85 90 95
Gly Phe Gly Phe Ile Asp Arg Ile Lys Ala Leu Leu Glu Lys Glu Cys
100 105 110
Pro Gly Val Val Ser Cys Ala Asp Ile Val Ala Leu Ala Ala Arg Asp
115 120 125
Ser Val Gly Val Ile Gly Gly Pro Phe Trp Ser Val Pro Thr Gly Arg
130 135 140
Arg Asp Gly Thr Val Ser Ile Lys Gln Glu Ala Leu Asp Gln Ile Pro
145 150 155 160
Ala Pro Thr Met Asn Phe Thr Gln Leu Leu Gln Ser Phe Gln Asn Lys
165 170 175
Ser Leu Asn Leu Ala Asp Leu Val Trp Leu Ser Gly Ala His Thr Ile
180 185 190
Gly Ile Ser Gln Cys Asn Ser Phe Ser Glu Arg Leu Tyr Asn Phe Thr
195 200 205
Gly Arg Gly Gly Pro Asp Asp Ala Asp Pro Ser Leu Asp Pro Leu Tyr
210 215 220
Ala Ala Lys Leu Arg Leu Lys Cys Lys Thr Leu Thr Asp Asn Thr Thr
225 230 235 240
Ile Val Glu Met Asp Pro Gly Ser Phe Arg Thr Phe Asp Leu Ser Tyr
245 250 255
Tyr Arg Gly Val Leu Lys Arg Arg Gly Leu Phe Gln Ser Asp Ala Ala
260 265 270

Leu Ile Thr Asp Ala Ala Ser Lys Ala Asp Ile Leu Ser Val Ile Asn
 275 280 285
 Ala Pro Pro Glu Val Phe Phe Gln Val Phe Ala Gly Ser Met Val Lys
 290 295 300
 Met Gly Ala Ile Glu Val Lys Thr Gly Ser Glu Gly Glu Ile Arg Lys
 305 310 315 320
 His Cys Ala Leu Val Asn Lys His
 325

<210> 20
 <211> 1522
 <212> DNA
 <213> Zea mays

<220>
 <221> CDS
 <222> (187)...(1170)

<400> 20
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 agaagagcag atcgagctgc agctggcaga ggccgagttg ttgctagcta gctcctgctt 120
 gctaaatttg catcgatatcc gatccattcc atgaagaagt cgtcgatgat ggcgcccattg 180
 acgatac atg gcg aga gtt gcc gct gtg ctc gtc ctc tcg tcg gct gcc 228
 Met Ala Arg Val Ala Ala Val Leu Val Leu Ser Ser Ala Ala
 1 5 10

 atg gct tcc gcc gca gga gca gct ggg ctg gac atg aat ttc tac ggc 276
 Met Ala Ser Ala Ala Gly Ala Ala Gly Leu Asp Met Asn Phe Tyr Gly
 15 20 25 30

 agc acg tgc ccg cgc gtg gag gcc atc gtc aag gag gag atg gtg gcg 324
 Ser Thr Cys Pro Arg Val Glu Ala Ile Val Lys Glu Glu Met Val Ala
 35 40 45

 acc ctc aag gcg gcg ccg acg ctg gcc ggc ccg ctg ctc cgc ctc cat 372
 Thr Leu Lys Ala Ala Pro Thr Leu Ala Gly Pro Leu Leu Arg Leu His
 50 55 60

 ttc cac gac tgc ttc gtc agg ggc tgc gac gcc tcc gtg ctc ctg gac 420
 Phe His Asp Cys Phe Val Arg Gly Cys Asp Ala Ser Val Leu Leu Asp
 65 70 75

 tcg act ccc acc agc acg gcg gag aag gac gcc acc ccg aac ctc acc 468
 Ser Thr Pro Thr Ser Thr Ala Glu Lys Asp Ala Thr Pro Asn Leu Thr
 80 85 90

 ctc cgg ggc ttc ggc tcc gtg cag cgc gtc aag gac cgg ctg gag gaa 516
 Leu Arg Gly Phe Gly Ser Val Gln Arg Val Lys Asp Arg Leu Glu Glu
 95 100 105 110

 gcg tgc ccg ggc aac gtc tcc tgc gcc gac gtc ctg gcg ctc atg gcg 564
 Ala Cys Pro Gly Asn Val Ser Cys Ala Asp Val Leu Ala Leu Met Ala
 115 120 125

 cgc gac gcc gtc gtg ctg gcc aac ggg ccc tcc tgg ccc gtc gcg ctg 612
 Arg Asp Ala Val Val Leu Ala Asn Gly Pro Ser Trp Pro Val Ala Leu

130	135	140	
ggc cgc cgc tac ggc cgc gtc tcc ctc gcc aac gag acc aac cag ctg			660
Gly Arg Arg Tyr Gly Arg Val Ser Leu Ala Asn Glu Thr Asn Gln Leu			
145	150	155	
ccc ccg ccc acc gcc aac ttc acc cgc ctc gtc agc atg ttc gcc gcc			708
Pro Pro Pro Thr Ala Asn Phe Thr Arg Leu Val Ser Met Phe Ala Ala			
160	165	170	
aag ggc ctc tcc gtc agg gac ctc gtc gtg ctc tcc ggc ggc cac acc			756
Lys Gly Leu Ser Val Arg Asp Leu Val Val Leu Ser Gly Gly His Thr			
175	180	185	190
ctc ggc acc gcg cac tgc aac ctc ttc agc gac cgc ctc tac aac ttc			804
Leu Gly Thr Ala His Cys Asn Leu Phe Ser Asp Arg Leu Tyr Asn Phe			
195	200	205	
acc ggc gcc aac agc ctc gcc gac gtc gac ccg gcg ctc gac gcc gcc			852
Thr Gly Ala Asn Ser Leu Ala Asp Val Asp Pro Ala Leu Asp Ala Ala			
210	215	220	
tac ctc gcc cgc ctc agg tcc agg tgc cgg agc ctc gcc gac aac acc			900
Tyr Leu Ala Arg Leu Arg Ser Arg Cys Arg Ser Leu Ala Asp Asn Thr			
225	230	235	
acg ctc aac gag atg gac ccc ggc agc ttc ctc agc ttc gac tcc agc			948
Thr Leu Asn Glu Met Asp Pro Gly Ser Phe Leu Ser Phe Asp Ser Ser			
240	245	250	
tac tac agc ctg gtg gcc agg cgc cgg ggg ctc ttc cac tcc gac gcc			996
Tyr Tyr Ser Leu Val Ala Arg Arg Arg Gly Leu Phe His Ser Asp Ala			
255	260	265	270
gcg ctg ctc acc gac ccg gcc acc agg gcg tac gtc cag cgc cag gcc			1044
Ala Leu Leu Thr Asp Pro Ala Thr Arg Ala Tyr Val Gln Arg Gln Ala			
275	280	285	
acg ggg ctc ttc acc gcc gag ttc ttc cgc gac ttc gcc gac tcc atg			1092
Thr Gly Leu Phe Thr Ala Glu Phe Phe Arg Asp Phe Ala Asp Ser Met			
290	295	300	
gtc aag atg tcc acc atc gac gtg ctc acc ggc cag cag cag ggc gag			1140
Val Lys Met Ser Thr Ile Asp Val Leu Thr Gly Gln Gln Gln Gly Glu			
305	310	315	
atc aga aag aaa tgc aac ctc gtc aac tga caaataatac gtacattaat			1190
Ile Arg Lys Lys Cys Asn Leu Val Asn *			
320	325		
tgctgctggt tttgacgatg cctttcactt acgttcatcc acttaattca tgcattccatg			1250
ttgggtgggt tcattcaatt attatatctg ttgcttacct ttacttttgc ttgggttaatc			1310
ttaattaaat cgtgtgagtt ttcttttctt ttcttgagta tatatatgta tgtacgtaga			1370
gcgtgatgag tgccttttca agtttattgt ttttttactt tttcctctcg tgcattatggt			1430
tcaaattccat gatgatgatg taatgcgcac gtaattaata atgacaatca agtcaataaa			1490
cacacatgca atttaaaaaa aaaaaaaaaa aa			1522

<210> 21
 <211> 327
 <212> PRT
 <213> Zea mays

<400> 21
 Met Ala Arg Val Ala Ala Val Leu Val Leu Ser Ser Ala Ala Met Ala
 1 5 10 15
 Ser Ala Ala Gly Ala Ala Gly Leu Asp Met Asn Phe Tyr Gly Ser Thr
 20 25 30
 Cys Pro Arg Val Glu Ala Ile Val Lys Glu Glu Met Val Ala Thr Leu
 35 40 45
 Lys Ala Ala Pro Thr Leu Ala Gly Pro Leu Leu Arg Leu His Phe His
 50 55 60
 Asp Cys Phe Val Arg Gly Cys Asp Ala Ser Val Leu Leu Asp Ser Thr
 65 70 75 80
 Pro Thr Ser Thr Ala Glu Lys Asp Ala Thr Pro Asn Leu Thr Leu Arg
 85 90 95
 Gly Phe Gly Ser Val Gln Arg Val Lys Asp Arg Leu Glu Glu Ala Cys
 100 105 110
 Pro Gly Asn Val Ser Cys Ala Asp Val Leu Ala Leu Met Ala Arg Asp
 115 120 125
 Ala Val Val Leu Ala Asn Gly Pro Ser Trp Pro Val Ala Leu Gly Arg
 130 135 140
 Arg Tyr Gly Arg Val Ser Leu Ala Asn Glu Thr Asn Gln Leu Pro Pro
 145 150 155 160
 Pro Thr Ala Asn Phe Thr Arg Leu Val Ser Met Phe Ala Ala Lys Gly
 165 170 175
 Leu Ser Val Arg Asp Leu Val Val Leu Ser Gly Gly His Thr Leu Gly
 180 185 190
 Thr Ala His Cys Asn Leu Phe Ser Asp Arg Leu Tyr Asn Phe Thr Gly
 195 200 205
 Ala Asn Ser Leu Ala Asp Val Asp Pro Ala Leu Asp Ala Ala Tyr Leu
 210 215 220
 Ala Arg Leu Arg Ser Arg Cys Arg Ser Leu Ala Asp Asn Thr Thr Leu
 225 230 235 240
 Asn Glu Met Asp Pro Gly Ser Phe Leu Ser Phe Asp Ser Ser Tyr Tyr
 245 250 255
 Ser Leu Val Ala Arg Arg Arg Gly Leu Phe His Ser Asp Ala Ala Leu
 260 265 270
 Leu Thr Asp Pro Ala Thr Arg Ala Tyr Val Gln Arg Gln Ala Thr Gly
 275 280 285
 Leu Phe Thr Ala Glu Phe Phe Arg Asp Phe Ala Asp Ser Met Val Lys
 290 295 300
 Met Ser Thr Ile Asp Val Leu Thr Gly Gln Gln Gln Gly Glu Ile Arg
 305 310 315 320
 Lys Lys Cys Asn Leu Val Asn
 325

<210> 22
 <211> 1451
 <212> DNA
 <213> Zea mays

<220>
 <221> CDS

<222> (170)...(1198)

<400> 22

ggaaacagct attgaccatg attacgcccc agttctatac gactcactat aggaaagctt 60
gtacgcctgc aggtaccggt cccggaattc cggggtcgac ccacgcgtcc gcacctgata 120
ttttttccga cggacacaca agcatatata catacacgcc gacataggg atg atg gct 178
Met Met Ala
1

tcc tct agt cct cag cgt gca gcc ggc gcc gcc gtc gcc ggc gtg ctg 226
Ser Ser Ser Pro Gln Arg Ala Ala Gly Ala Ala Val Ala Gly Val Leu
5 10 15

ctg gtg gcg gct gcc gcc ctg tgc tcg tgc ggc gcc atg gcg cag ctg 274
Leu Val Ala Ala Ala Leu Cys Ser Cys Gly Ala Met Ala Gln Leu
20 25 30 35

acc gcg gac tac tac gac tgc aca tgc cct gac gcc tac aac atc gtg 322
Thr Ala Asp Tyr Tyr Asp Cys Thr Cys Pro Asp Ala Tyr Asn Ile Val
40 45 50

aag cag gtc ctg atc gag gcg cac aag tcc gac gtg cgc atc tac gcc 370
Lys Gln Val Leu Ile Glu Ala His Lys Ser Asp Val Arg Ile Tyr Ala
55 60 65

agc ctc acc tgc ctc cac ttc cac gac tgc ttc gtc cag ggc tgc gat 418
Ser Leu Thr Cys Leu His Phe His Asp Cys Phe Val Gln Gly Cys Asp
70 75 80

ggc tcg gtg ctc ctg gac gcc gtt ccg ggg gtg gcc aac tcc act gag 466
Gly Ser Val Leu Leu Asp Ala Val Pro Gly Val Ala Asn Ser Thr Glu
85 90 95

aag ctg gcg ccg gcc aac aac aac tcg gcg cga ggg ttc ccg gtg gtg 514
Lys Leu Ala Pro Ala Asn Asn Asn Ser Ala Arg Gly Phe Pro Val Val
100 105 110 115

gac aaa gtg aag gcg gcg ctg gag gac gcc tgc ccc ggc gtc gtc tcc 562
Asp Lys Val Lys Ala Ala Leu Glu Asp Ala Cys Pro Gly Val Val Ser
120 125 130

tgc gcc gac atc ctc gcc ctc gcc gca gag atc tcg gtc gaa ctg tcc 610
Cys Ala Asp Ile Leu Ala Leu Ala Ala Glu Ile Ser Val Glu Leu Ser
135 140 145

gga gga cca aag tgg gca gtg ctt ctt ggg agg cta gac agc aag aag 658
Gly Gly Pro Lys Trp Ala Val Leu Leu Gly Arg Leu Asp Ser Lys Lys
150 155 160

gcc gac ttc aag agc gcg gag aac ctg ccg tcg ccg ttc gac aac ctg 706
Ala Asp Phe Lys Ser Ala Glu Asn Leu Pro Ser Pro Phe Asp Asn Leu
165 170 175

acg gtg ctg gag cag aag ttc gcg gcc gtg ggc ctc cac acc gtg gac 754
Thr Val Leu Glu Gln Lys Phe Ala Ala Val Gly Leu His Thr Val Asp
180 185 190 195

[illegible]

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<210> 23
<211> 342
<212> PRT
<213> Zea mays
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Asn Ile Val Lys Gln Val Leu Ile Glu Ala His Lys Ser Asp Val Arg
50 55 60
Ile Tyr Ala Ser Leu Thr Cys Leu His Phe His Asp Cys Phe Val Gln
65 70 75 80
Gly Cys Asp Gly Ser Val Leu Leu Asp Ala Val Pro Gly Val Ala Asn
85 90 95
Ser Thr Glu Lys Leu Ala Pro Ala Asn Asn Ser Ala Arg Gly Phe
100 105 110
Pro Val Val Asp Lys Val Lys Ala Ala Leu Glu Asp Ala Cys Pro Gly
115 120 125
Val Val Ser Cys Ala Asp Ile Leu Ala Leu Ala Ala Glu Ile Ser Val
130 135 140
Glu Leu Ser Gly Gly Pro Lys Trp Ala Val Leu Leu Gly Arg Leu Asp
145 150 155 160
Ser Lys Lys Ala Asp Phe Lys Ser Ala Glu Asn Leu Pro Ser Pro Phe
165 170 175
Asp Asn Leu Thr Val Leu Glu Gln Lys Phe Ala Ala Val Gly Leu His
180 185 190
Thr Val Asp Leu Val Ala Leu Ser Gly Ala His Thr Phe Gly Arg Val
195 200 205
Gln Cys Gln Phe Val Thr Gly Arg Leu Tyr Asn Phe Ser Gly Thr Asn
210 215 220
Arg Pro Asp Pro Thr Leu Asn Ser Gly Tyr Arg Ala Phe Leu Ala Gln
225 230 235 240
Arg Cys Pro Gln Asn Gly Ser Pro Ser Ala Leu Asn Asp Leu Asp Pro
245 250 255
Thr Thr Pro Asn Leu Phe Asp Asn His Tyr Tyr Thr Asn Leu Glu Val
260 265 270
Asn Arg Gly Phe Leu Gly Ser Asp Gln Glu Leu Lys Ser Ala Pro Gln
275 280 285
Ala Gln Gly Val Thr Ala Pro Val Val Asp Gln Phe Ala Thr Ser Gln
290 295 300
Ala Ala Phe Phe Ser Ser Phe Ala Gln Ser Met Ile Asn Met Gly Asn
305 310 315 320
Ile Gln Pro Leu Thr Asp Pro Ala Lys Gly Glu Val Arg Cys Asp Cys
325 330 335
Arg Val Ala Asn Asp Asp
340

<210> 24
<211> 1334
<212> DNA
<213> Zea mays

<220>
<221> CDS
<222> (62)...(1075)

<400> 24
actttgttgc tgtttttatt cgtttgtcac ataagcagtg gtggtcggtc ggccggcgac 60
a atg agc ggc cgt gtg ttc gtc ctg gcc gct gcc ttc ggc gtg ctg ctc 109
Met Ser Gly Arg Val Phe Val Leu Ala Ala Phe Gly Val Leu Leu
1 5 10 15
gcc gca gcc gcc gtg tcc tcg agg ccc gtc ctg act ccg ctg ggt act 157
Ala Ala Ala Ala Val Ser Ser Arg Pro Val Leu Thr Pro Leu Gly Thr

20	25	30	
agc cgc cct gct gcc ggc gac ctg tcc gtg tac ttc cac gcg gac tcg Ser Arg Pro Ala Ala Gly Asp Leu Ser Val Tyr Phe His Ala Asp Ser 35 40 45			205
tgc ccg cag ctg gag acg atc gtg cgg tcc agc gtg gac gcg gcg ctc Cys Pro Gln Leu Glu Thr Ile Val Arg Ser Ser Val Asp Ala Ala Leu 50 55 60			253
cag cag aac gtc cgt ctg acg gcg ggt ctc ctc cgc ctc ttg ttc cac Gln Gln Asn Val Arg Leu Thr Ala Gly Leu Leu Arg Leu Leu Phe His 65 70 75 80			301
gac tgc ttc ccg cag ggc tgc gac gcg tcc atc ctc ctg gac aac ggc Asp Cys Phe Pro Gln Gly Cys Asp Ala Ser Ile Leu Leu Asp Asn Gly 85 90 95			349
gag cgc ggc ctc ccg ccc aac gtg ggg ctg cag cag gag gcc gtg cag Glu Arg Gly Leu Pro Pro Asn Val Gly Leu Gln Gln Glu Ala Val Gln 100 105 110			397
ctg gtg gag gac atc cgc ggg aag gtg cac gcg gcg tgc ggg ccc acc Leu Val Glu Asp Ile Arg Gly Lys Val His Ala Ala Cys Gly Pro Thr 115 120 125			445
gtg tgc tgc gcc gac atc acg gtg ctg gcc acc cgc gac gcc gtg agc Val Ser Cys Ala Asp Ile Thr Val Leu Ala Thr Arg Asp Ala Val Ser 130 135 140			493
ctg tcc ggc ggg cct tcc ttc acg gtg ccg ctg ggg cgg ctg gac agc Leu Ser Gly Gly Pro Ser Phe Thr Val Pro Leu Gly Arg Leu Asp Ser 145 150 155 160			541
gcg gcg ccg gcg tcc agc aac gac gtg ttc acg ctg ccg ccg ccg acg Ala Ala Pro Ala Ser Ser Asn Asp Val Phe Thr Leu Pro Pro Pro Thr 165 170 175			589
gcg acg gtg gac gag ctg ctg acg gcg ttc ggg agc aag aac ctg tcg Ala Thr Val Asp Glu Leu Leu Thr Ala Phe Gly Ser Lys Asn Leu Ser 180 185 190			637
gac ccg gcg gac ctg gtg gcg ctg tgc ggc gcg cac acg gtg ggg aag Asp Pro Ala Asp Leu Val Ala Leu Ser Gly Ala His Thr Val Gly Lys 195 200 205			685
gcg ccg tgc agc tgc ttt ggc gac gtg gcg ggc ccg gcc acc gac gac Ala Arg Cys Ser Ser Phe Gly Asp Val Ala Gly Pro Ala Thr Asp Asp 210 215 220			733
gtg acg ccg tgc gtg acg gcg acg tgc tgc gcc ccc ggg agc ggc gac Val Thr Arg Cys Val Thr Ala Thr Cys Ser Ala Pro Gly Ser Gly Asp 225 230 235 240			781
acg ctg ccg gac ctg gac ttc ctg acg ccc gcc gtg ttc gac aac ctc Thr Leu Arg Asp Leu Asp Phe Leu Thr Pro Ala Val Phe Asp Asn Leu 245 250 255			829

tac ttc gtg gag ctg acg ctg agg aag aac aag ggg gtg atg ctg ccg	877
Tyr Phe Val Glu Leu Thr Leu Arg Lys Asn Lys Gly Val Met Leu Pro	
260 265 270	
tcg gac cag ggg ctg gtg agc gac ccg cgc acg agc tgg ctc gtc cag	925
Ser Asp Gln Gly Leu Val Ser Asp Pro Arg Thr Ser Trp Leu Val Gln	
275 280 285	
ggc ttc gcc gac aac cac tgg tgg ttc ttc gac cag ttc agg acc tcc	973
Gly Phe Ala Asp Asn His Trp Trp Phe Phe Asp Gln Phe Arg Thr Ser	
290 295 300	
atg atc aag atg agc cag ctc agg gga ccc cag ggg aac gtc ggc gag	1021
Met Ile Lys Met Ser Gln Leu Arg Gly Pro Gln Gly Asn Val Gly Glu	
305 310 315 320	
atc cgc cgt aac tgc ttc cgc cca aac acc aac ggc atc gcc gcc tct	1069
Ile Arg Arg Asn Cys Phe Arg Pro Asn Thr Asn Gly Ile Ala Ala Ser	
325 330 335	
gct tga gttgactgac caggcaccga tccattactt cacttttcaact gtgtgtaata	1125
Ala *	

attaataata ataaaaacaaa aacaacgccca gcccgtacgt gccgtgtgag gggggcacgt	1185
ggttgtggct atactgtagc cgtcaccacc atgtcggcgt cgtccatgca tgtcgcatta	1245
ccgatttttg ttcattgttcc gatctcatct catcatctcg ctatcaataa caattataat	1305
agtgttttatt agtaaaaaaa aaaaaaaaaa	1334

<210> 25
 <211> 337
 <212> PRT
 <213> Zea mays

<400> 25	
Met Ser Gly Arg Val Phe Val Leu Ala Ala Ala Phe Gly Val Leu Leu	
1 5 10 15	
Ala Ala Ala Ala Val Ser Ser Arg Pro Val Leu Thr Pro Leu Gly Thr	
20 25 30	
Ser Arg Pro Ala Ala Gly Asp Leu Ser Val Tyr Phe His Ala Asp Ser	
35 40 45	
Cys Pro Gln Leu Glu Thr Ile Val Arg Ser Ser Val Asp Ala Ala Leu	
50 55 60	
Gln Gln Asn Val Arg Leu Thr Ala Gly Leu Leu Arg Leu Leu Phe His	
65 70 75 80	
Asp Cys Phe Pro Gln Gly Cys Asp Ala Ser Ile Leu Leu Asp Asn Gly	
85 90 95	
Glu Arg Gly Leu Pro Pro Asn Val Gly Leu Gln Gln Glu Ala Val Gln	
100 105 110	
Leu Val Glu Asp Ile Arg Gly Lys Val His Ala Ala Cys Gly Pro Thr	
115 120 125	
Val Ser Cys Ala Asp Ile Thr Val Leu Ala Thr Arg Asp Ala Val Ser	
130 135 140	
Leu Ser Gly Gly Pro Ser Phe Thr Val Pro Leu Gly Arg Leu Asp Ser	
145 150 155 160	
Ala Ala Pro Ala Ser Ser Asn Asp Val Phe Thr Leu Pro Pro Pro Thr	

Cys	Asp	Ala	Ser	Val	Leu	Leu	Ala	Asp	Asn	Ala	Ala	Thr	Gly	Phe	Thr		
				75					80					85			
ggc	gag	cag	ggt	gct	gcg	ccc	aac	gcc	ggg	tcg	ctg	agg	ggc	ttc	gac	401	
Gly	Glu	Gln	Gly	Ala	Ala	Pro	Asn	Ala	Gly	Ser	Leu	Arg	Gly	Phe	Asp		
			90					95					100				
gtc	atc	gcc	aac	atc	aag	gca	cag	gtg	gag	gca	gtc	tgc	aag	cag	acc	449	
Val	Ile	Ala	Asn	Ile	Lys	Ala	Gln	Val	Glu	Ala	Val	Cys	Lys	Gln	Thr		
		105					110					115					
gtc	tcc	tgc	gcc	gac	atc	ctc	gcc	gtc	gcc	gcc	cgt	gat	tcc	gtc	gtc	497	
Val	Ser	Cys	Ala	Asp	Ile	Leu	Ala	Val	Ala	Ala	Arg	Asp	Ser	Val	Val		
	120					125					130						
gcg	ttg	ggc	ggg	ccg	tca	tgg	acg	gtt	cct	ctg	ggg	cgg	agg	gac	tcg	545	
Ala	Leu	Gly	Gly	Pro	Ser	Trp	Thr	Val	Pro	Leu	Gly	Arg	Arg	Asp	Ser		
135					140					145					150		
acg	acg	gcg	agc	ctg	tcc	ctg	gcg	aac	agc	gac	ctg	ccg	cct	ccc	ttc	593	
Thr	Thr	Ala	Ser	Leu	Ser	Leu	Ala	Asn	Ser	Asp	Leu	Pro	Pro	Pro	Phe		
				155					160					165			
ttc	aac	ctc	ggc	cag	ctc	ata	aca	gcg	ttc	ggc	aac	aag	ggt	ttc	acc	641	
Phe	Asn	Leu	Gly	Gln	Leu	Ile	Thr	Ala	Phe	Gly	Asn	Lys	Gly	Phe	Thr		
		170						175					180				
gcg	acc	gag	atg	gcc	acg	ctc	tcc	ggc	gcg	cac	acc	atc	ggg	cag	gcg	689	
Ala	Thr	Glu	Met	Ala	Thr	Leu	Ser	Gly	Ala	His	Thr	Ile	Gly	Gln	Ala		
		185					190					195					
cag	tgc	aag	aac	ttc	agg	gac	cac	atc	tac	aac	gac	acc	aac	atc	aac	737	
Gln	Cys	Lys	Asn	Phe	Arg	Asp	His	Ile	Tyr	Asn	Asp	Thr	Asn	Ile	Asn		
	200					205					210						
cag	ggc	ttc	gcg	agc	tcg	ctc	aag	gcc	aac	tgc	ccc	cgg	ccc	acc	ggc	785	
Gln	Gly	Phe	Ala	Ser	Ser	Leu	Lys	Ala	Asn	Cys	Pro	Arg	Pro	Thr	Gly		
215					220				225					230			
tcc	ggc	gac	ggc	aac	ctg	gcg	ccg	ctc	gac	acc	acc	acg	ccg	tac	agc	833	
Ser	Gly	Asp	Gly	Asn	Leu	Ala	Pro	Leu	Asp	Thr	Thr	Thr	Pro	Tyr	Ser		
				235					240					245			
ttc	gac	aac	gcc	tac	tac	agc	aac	ctg	ctg	agc	cag	aag	ggg	ctc	ctg	881	
Phe	Asp	Asn	Ala	Tyr	Tyr	Ser	Asn	Leu	Leu	Ser	Gln	Lys	Gly	Leu	Leu		
		250						255					260				
cac	tcg	gac	cag	gag	ctc	ttc	aac	ggc	ggc	agc	acc	gac	aac	acc	gtc	929	
His	Ser	Asp	Gln	Glu	Leu	Phe	Asn	Gly	Gly	Ser	Thr	Asp	Asn	Thr	Val		
		265					270					275					
agg	aac	ttc	gcg	tcc	aac	tcg	gcc	gcc	ttc	agc	agc	gcc	ttc	gcc	gcg	977	
Arg	Asn	Phe	Ala	Ser	Asn	Ser	Ala	Ala	Phe	Ser	Ser	Ala	Phe	Ala	Ala		
	280					285					290						
gcc	atg	gtg	aag	atg	ggc	aac	ctc	agc	ccg	ctc	acc	gga	tct	cag	ggc	1025	
Ala	Met	Val	Lys	Met	Gly	Asn	Leu	Ser	Pro	Leu	Thr	Gly	Ser	Gln	Gly		

295	300	305	310	
cag atc agg ctt acc tgc tcc aca gtg aac taa gattaataat aatcaccata	1078			
Gln Ile Arg Leu Thr Cys Ser Thr Val Asn *				
315	320			

cgcaaaaaag agtggatatat tcacatgcga ataataaggc taagccacca tgtgactagc	1138
tagtgggtata ttcaacgaat cgtttgaaaag ggacgagtgc gactttaatt ttagatacta	1198
gctgcaaaaag cggcatatat gtatcagccc gatcaattgc tcaaagaaaa gatgcacgtc	1258
atacatattca aaaaaaaaaa aaaaaaa	1285

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 <211> 320
 <212> PRT
 <213> Zea mays

<400> 27

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20 25 30	
Cys Pro Asn Ala Leu Ser Thr Ile Lys Ser Ala Val Asn Ala Ala Val	
35 40 45	
Gln Lys Glu Asn Arg Met Gly Ala Ser Leu Leu Arg Leu His Phe His	
50 55 60	
Asp Cys Phe Val Gln Gly Cys Asp Ala Ser Val Leu Leu Ala Asp Asn	
65 70 75 80	
Ala Ala Thr Gly Phe Thr Gly Glu Gln Gly Ala Ala Pro Asn Ala Gly	
85 90 95	
Ser Leu Arg Gly Phe Asp Val Ile Ala Asn Ile Lys Ala Gln Val Glu	
100 105 110	
Ala Val Cys Lys Gln Thr Val Ser Cys Ala Asp Ile Leu Ala Val Ala	
115 120 125	
Ala Arg Asp Ser Val Val Ala Leu Gly Gly Pro Ser Trp Thr Val Pro	
130 135 140	
Leu Gly Arg Arg Asp Ser Thr Thr Ala Ser Leu Ser Leu Ala Asn Ser	
145 150 155 160	
Asp Leu Pro Pro Pro Phe Phe Asn Leu Gly Gln Leu Ile Thr Ala Phe	
165 170 175	
Gly Asn Lys Gly Phe Thr Ala Thr Glu Met Ala Thr Leu Ser Gly Ala	
180 185 190	
His Thr Ile Gly Gln Ala Gln Cys Lys Asn Phe Arg Asp His Ile Tyr	
195 200 205	
Asn Asp Thr Asn Ile Asn Gln Gly Phe Ala Ser Ser Leu Lys Ala Asn	
210 215 220	
Cys Pro Arg Pro Thr Gly Ser Gly Asp Gly Asn Leu Ala Pro Leu Asp	
225 230 235 240	
Thr Thr Thr Pro Tyr Ser Phe Asp Asn Ala Tyr Tyr Ser Asn Leu Leu	
245 250 255	
Ser Gln Lys Gly Leu Leu His Ser Asp Gln Glu Leu Phe Asn Gly Gly	
260 265 270	
Ser Thr Asp Asn Thr Val Arg Asn Phe Ala Ser Asn Ser Ala Ala Phe	
275 280 285	
Ser Ser Ala Phe Ala Ala Ala Met Val Lys Met Gly Asn Leu Ser Pro	
290 295 300	
Leu Thr Gly Ser Gln Gly Gln Ile Arg Leu Thr Cys Ser Thr Val Asn	

305

310

315

320

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<211> 1159

<212> DNA

<213> Zea mays

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<222> (7)...(969)

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Met Ala Val Leu His Leu Gln Ala Ala Ala Val Ala Val Leu

1

5

10

ctg atg gcg acg ggg ctg cgc gcg cag ctg cgt gtg ggc ttc tac gac 96

Leu Met Ala Thr Gly Leu Arg Ala Gln Leu Arg Val Gly Phe Tyr Asp

15

20

25

30

agc tcg tgc cca gcg gcg gag atc atc gtg cag cag gag gtg agc agg 144

Ser Ser Cys Pro Ala Ala Glu Ile Ile Val Gln Gln Glu Val Ser Arg

35

40

45

gcg gtg gcg gcc aac ccg ggc ctc gcc gcc ggc ctg ctc cgc ctc cac 192

Ala Val Ala Ala Asn Pro Gly Leu Ala Ala Gly Leu Leu Arg Leu His

50

55

60

ttc cac gac tgt ttc gtt ggg ggc tgc gac gcg tcc gtg ctc atc gac 240

Phe His Asp Cys Phe Val Gly Gly Cys Asp Ala Ser Val Leu Ile Asp

65

70

75

tcc acc aag ggc aac acc gcg gag aag gac gcc ggg ccc aac ctc agc 288

Ser Thr Lys Gly Asn Thr Ala Glu Lys Asp Ala Gly Pro Asn Leu Ser

80

85

90

ctg cgg ggc ttc gag gtc gtc gat cgc atc aag gcg cgc gtc gag cag 336

Leu Arg Gly Phe Glu Val Val Asp Arg Ile Lys Ala Arg Val Glu Gln

95

100

105

110

gcc tgc ttc ggc gtc gtc tcc tgc gcg gac ata ctc gcg ttc gcg gcc 384

Ala Cys Phe Gly Val Val Ser Cys Ala Asp Ile Leu Ala Phe Ala Ala

115

120

125

agg gac agc gtc gca ctc gcc ggc ggg aac gcg tac cag gtg ccg gcg 432

Arg Asp Ser Val Ala Leu Ala Gly Gly Asn Ala Tyr Gln Val Pro Ala

130

135

140

ggg cgg cgg gac ggg tcc gtg tcg cgc gcg tcg gac acc aac ggc aac 480

Gly Arg Arg Asp Gly Ser Val Ser Arg Ala Ser Asp Thr Asn Gly Asn

145

150

155

ctg ccg ccg ccg acg gcc aac gtc gcg cag ctc acg cag atc ttc ggc 528

Leu Pro Pro Pro Thr Ala Asn Val Ala Gln Leu Thr Gln Ile Phe Gly

160

165

170

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acc aag ggc ctg acg cag aag gag atg gtc atc ctg tcg ggc gcg cac      576
Thr Lys Gly Leu Thr Gln Lys Glu Met Val Ile Leu Ser Gly Ala His
175                      180                      185                      190

acc atc ggc tcc tcg cac tgc agc tcc ttc agc ggc cgg ctg tcg ggg      624
Thr Ile Gly Ser Ser His Cys Ser Ser Phe Ser Gly Arg Leu Ser Gly
                      195                      200                      205

tcg gcc acg acg gcg ggc ggg cag gac ccg acc atg gac ccg gcg tac      672
Ser Ala Thr Thr Ala Gly Gly Gln Asp Pro Thr Met Asp Pro Ala Tyr
                      210                      215                      220

gtg gcg cag ctg gcg cgg cag tgc ccg cag ggc ggc gac ccg ctc gtg      720
Val Ala Gln Leu Ala Arg Gln Cys Pro Gln Gly Gly Asp Pro Leu Val
                      225                      230                      235

ccc atg gac tac gtc tcc ccc aac gcc ttc gac gag ggc ttc tac aag      768
Pro Met Asp Tyr Val Ser Pro Asn Ala Phe Asp Glu Gly Phe Tyr Lys
                      240                      245                      250

ggc gtc atg tcc aac cgc ggc ctg ctg tcc tcg gac cag gcg ctg ctc      816
Gly Val Met Ser Asn Arg Gly Leu Leu Ser Ser Asp Gln Ala Leu Leu
255                      260                      265                      270

agc gac aag aac acc gcc gtg cag gtc gtc acc tac gcc aac gac ccg      864
Ser Asp Lys Asn Thr Ala Val Gln Val Val Thr Tyr Ala Asn Asp Pro
                      275                      280                      285

gcc acc ttc cag gcc gac ttc gcc gcc gcc atg gtc aag atg ggc tcc      912
Ala Thr Phe Gln Ala Asp Phe Ala Ala Ala Met Val Lys Met Gly Ser
                      290                      295                      300

gtc ggc gtg ctc acc gcc acc agc ggc aag gtc agg gcc aac tgc aga      960
Val Gly Val Leu Thr Gly Thr Ser Gly Lys Val Arg Ala Asn Cys Arg
                      305                      310                      315

gtc gcc tga tccatcatca tcattcactc gtgtggagtt gtagattcgt      1009
Val Ala *
                      320

tatattgatt gatttggacc ggacgacgtc gacgggatgg cgtagcatag catagtctgc      1069
ttgcgcaatt gtatgtattg cctgtacttg cgcgtgtatg ggtttcgctg tgcaaatattt      1129
cgttggctcc ccaaaaaaaaa aaaaaaaaaa      1159

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<210> 29
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 <212> PRT
 <213> Zea mays

<400> 29
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 Ala Thr Gly Leu Arg Ala Gln Leu Arg Val Gly Phe Tyr Asp Ser Ser
 20 25 30
 Cys Pro Ala Ala Glu Ile Ile Val Gln Gln Glu Val Ser Arg Ala Val
 35 40 45
 Ala Ala Asn Pro Gly Leu Ala Ala Gly Leu Leu Arg Leu His Phe His

50	Asp Cys Phe Val Gly	55	Gly Cys Asp Ala Ser	60	Val Leu Ile Asp Ser Thr
65	Lys Gly Asn Thr Ala	70	Glu Lys Asp Ala Gly	75	Pro Asn Leu Ser Leu Arg
	85		90		95
	Gly Phe Glu Val Val		Asp Arg Ile Lys		Ala Arg Val Glu Gln Ala Cys
	100		105		110
	Phe Gly Val Val Ser		Cys Ala Asp Ile		Leu Ala Phe Ala Arg Asp
	115		120		125
	Ser Val Ala Leu Ala		Gly Gly Asn Ala		Tyr Gln Val Pro Ala Gly Arg
	130		135		140
	Arg Asp Gly Ser Val		Ser Arg Ala Ser		Asp Thr Asn Gly Asn Leu Pro
	145		150		155
	Pro Pro Thr Ala Asn		Val Ala Gln Leu		Thr Gln Ile Phe Gly Thr Lys
	165		170		175
	Gly Leu Thr Gln Lys		Glu Met Val Ile		Leu Ser Gly Ala His Thr Ile
	180		185		190
	Gly Ser Ser His Cys		Ser Ser Phe Ser		Gly Arg Leu Ser Gly Ser Ala
	195		200		205
	Thr Thr Ala Gly Gly		Gln Asp Pro Thr		Met Asp Pro Ala Tyr Val Ala
	210		215		220
	Gln Leu Ala Arg Gln		Cys Pro Gln Gly		Gly Asp Pro Leu Val Pro Met
	225		230		235
	Asp Tyr Val Ser Pro		Asn Ala Phe Asp		Glu Gly Phe Tyr Lys Gly Val
	245		250		255
	Met Ser Asn Arg Gly		Leu Leu Ser Ser		Asp Gln Ala Leu Leu Ser Asp
	260		265		270
	Lys Asn Thr Ala Val		Gln Val Val Thr		Tyr Ala Asn Asp Pro Ala Thr
	275		280		285
	Phe Gln Ala Asp Phe		Ala Ala Ala Met		Val Lys Met Gly Ser Val Gly
	290		295		300
	Val Leu Thr Gly Thr		Ser Gly Lys Val		Arg Ala Asn Cys Arg Val Ala
	305		310		315
					320

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 <213> Zea mays

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 gcggcgagggc caagggcgcg ggcgcgggcg cggacggca atg gcg aga gct gga 114
 Met Ala Arg Ala Gly
 1 5
 ggc ggc ggt ccg gtc cgc ggc gcg gcg ctg gtg gtc gtg ctg cta ggc 162
 Gly Gly Gly Pro Val Arg Gly Ala Ala Leu Val Val Val Leu Leu Gly
 10 15 20
 atc gtc gtg ggc gcg gcg agg gct cag ctg cgg cag aac tac tac ggc 210
 Ile Val Val Gly Ala Ala Arg Ala Gln Leu Arg Gln Asn Tyr Tyr Gly
 25 30 35

agc tcg tgc ccc agc gcg gag tcc acg gtg cgc tcc gtc atc tcg cag	258
Ser Ser Cys Pro Ser Ala Glu Ser Thr Val Arg Ser Val Ile Ser Gln	
40 45 50	
cgc ctc cag cag agc ttc gcc gtg ggg ccc gcc acg ctc cgc ctc ttc	306
Arg Leu Gln Gln Ser Phe Ala Val Gly Pro Gly Thr Leu Arg Leu Phe	
55 60 65	
ttc cac gac tgc ttc gtc agg gga tgc gac gcg tcg gtg atg ctg atg	354
Phe His Asp Cys Phe Val Arg Gly Cys Asp Ala Ser Val Met Leu Met	
70 75 80 85	
gcg ccg aac ggg gac gac gag agc cac agc gcc gcg gac gcc acg ctg	402
Ala Pro Asn Gly Asp Asp Glu Ser His Ser Gly Ala Asp Ala Thr Leu	
90 95 100	
tcg ccg gac gcc gtg gac gcc atc aac aag gcg aag gcg gcc gtg gag	450
Ser Pro Asp Ala Val Asp Ala Ile Asn Lys Ala Lys Ala Val Glu	
105 110 115	
gcg ctc ccc ggg tgc gcc gcc aag gtc tcg tgc gcg gac atc ctc gcc	498
Ala Leu Pro Gly Cys Ala Gly Lys Val Ser Cys Ala Asp Ile Leu Ala	
120 125 130	
atg gcc gca cgt gac gtc gtc tcc ctg ctg gcc ggt ccg agc tac ggc	546
Met Ala Ala Arg Asp Val Val Ser Leu Leu Gly Gly Pro Ser Tyr Gly	
135 140 145	
gtg gag ctg ggg cgg ctg gac gcc aag acg ttc aac agg gcc atc gtg	594
Val Glu Leu Gly Arg Leu Asp Gly Lys Thr Phe Asn Arg Ala Ile Val	
150 155 160 165	
aag cac gtc ctc ccg gcc ccc gcc ttc aac ctg gac cag ctc aac gcc	642
Lys His Val Leu Pro Gly Pro Gly Phe Asn Leu Asp Gln Leu Asn Ala	
170 175 180	
ctc ttc gcg cag aac gcc ctc acg cag acg gac atg atc gcg ctc tca	690
Leu Phe Ala Gln Asn Gly Leu Thr Gln Thr Asp Met Ile Ala Leu Ser	
185 190 195	
ggc gcg cac acg atc ggg gtg acg cac tgc gac aag ttc gtg cgg cgg	738
Gly Ala His Thr Ile Gly Val Thr His Cys Asp Lys Phe Val Arg Arg	
200 205 210	
atc tac acg ttc aag cag cgg ctg gcg tgg aac ccg ccg atg aac ctg	786
Ile Tyr Thr Phe Lys Gln Arg Leu Ala Trp Asn Pro Pro Met Asn Leu	
215 220 225	
gac ttc ctg cgc tcg ctg cgg cgg gtg tgc ccc ctc agc tac agc ccc	834
Asp Phe Leu Arg Ser Leu Arg Arg Val Cys Pro Leu Ser Tyr Ser Pro	
230 235 240 245	
acg gcg ttc gcc atg ctg gac gtc acc acg ccc agg gtc ttc gac aac	882
Thr Ala Phe Ala Met Leu Asp Val Thr Thr Pro Arg Val Phe Asp Asn	
250 255 260	

gcc tac ttc aac aac ctc cgc tac aac aag ggc ctg ctc gcc tcc gac 930
Ala Tyr Phe Asn Asn Leu Arg Tyr Asn Lys Gly Leu Leu Ala Ser Asp
265 270 275

cag gtg ctc ttc acc gac cgc cgc tcc cga ccc acc gtc aac ctc ttc 978
Gln Val Leu Phe Thr Asp Arg Arg Ser Arg Pro Thr Val Asn Leu Phe
280 285 290

gcc gcc aac gcc acc gcc ttc tac gag gca ttc gtc gcc gcc atg gcc 1026
Ala Ala Asn Ala Thr Ala Phe Tyr Glu Ala Phe Val Ala Ala Met Ala
295 300 305

aag ctc ggc agg atc ggc ctc aag acc ggc gcc gac ggc gag ata cgc 1074
Lys Leu Gly Arg Ile Gly Leu Lys Thr Gly Ala Asp Gly Glu Ile Arg
310 315 320 325

cgc gtc tgc acc gcc gtc aac taa gcctgcattg gctgcttgct gcttgcgtgc 1128
Arg Val Cys Thr Ala Val Asn *
330

gtggggtttca cttattttcac ttctttctttc tcttggtttat atacgtacgt ttgtcggatg 1188
gatttttggtta gccatgagat gacatccttg ctctgagcta gcggacctgc cccgattgga 1248
tgatatagat tgatccagat gttctttctaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 1308
aa 1310

<210> 31
<211> 332
<212> PRT
<213> Zea mays

<400> 31
Met Ala Arg Ala Gly Gly Gly Gly Pro Val Arg Gly Ala Ala Leu Val
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Val Val Leu Leu Gly Ile Val Val Gly Ala Ala Arg Ala Gln Leu Arg
20 25 30
Gln Asn Tyr Tyr Gly Ser Ser Cys Pro Ser Ala Glu Ser Thr Val Arg
35 40 45
Ser Val Ile Ser Gln Arg Leu Gln Gln Ser Phe Ala Val Gly Pro Gly
50 55 60
Thr Leu Arg Leu Phe Phe His Asp Cys Phe Val Arg Gly Cys Asp Ala
65 70 75 80
Ser Val Met Leu Met Ala Pro Asn Gly Asp Asp Glu Ser His Ser Gly
85 90 95
Ala Asp Ala Thr Leu Ser Pro Asp Ala Val Asp Ala Ile Asn Lys Ala
100 105 110
Lys Ala Ala Val Glu Ala Leu Pro Gly Cys Ala Gly Lys Val Ser Cys
115 120 125
Ala Asp Ile Leu Ala Met Ala Ala Arg Asp Val Val Ser Leu Leu Gly
130 135 140
Gly Pro Ser Tyr Gly Val Glu Leu Gly Arg Leu Asp Gly Lys Thr Phe
145 150 155 160
Asn Arg Ala Ile Val Lys His Val Leu Pro Gly Pro Gly Phe Asn Leu
165 170 175
Asp Gln Leu Asn Ala Leu Phe Ala Gln Asn Gly Leu Thr Gln Thr Asp
180 185 190
Met Ile Ala Leu Ser Gly Ala His Thr Ile Gly Val Thr His Cys Asp
195 200 205

Lys Phe Val Arg Arg Ile Tyr Thr Phe Lys Gln Arg Leu Ala Trp Asn
 210 215 220
 Pro Pro Met Asn Leu Asp Phe Leu Arg Ser Leu Arg Arg Val Cys Pro
 225 230 235 240
 Leu Ser Tyr Ser Pro Thr Ala Phe Ala Met Leu Asp Val Thr Thr Pro
 245 250 255
 Arg Val Phe Asp Asn Ala Tyr Phe Asn Asn Leu Arg Tyr Asn Lys Gly
 260 265 270
 Leu Leu Ala Ser Asp Gln Val Leu Phe Thr Asp Arg Arg Ser Arg Pro
 275 280 285
 Thr Val Asn Leu Phe Ala Ala Asn Ala Thr Ala Phe Tyr Glu Ala Phe
 290 295 300
 Val Ala Ala Met Ala Lys Leu Gly Arg Ile Gly Leu Lys Thr Gly Ala
 305 310 315 320
 Asp Gly Glu Ile Arg Arg Val Cys Thr Ala Val Asn
 325 330

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 <211> 1170
 <212> DNA
 <213> Zea mays

<220>
 <221> CDS
 <222> (25)...(1092)

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 Met Tyr Thr Ala Met Ala Ala Arg Pro
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 ctg ctt ctt ccc cct ccg gtc ctc ctc ctc ctg gtg gtg ctg gct gct 99
 Leu Leu Leu Pro Pro Pro Val Leu Leu Leu Leu Val Val Leu Ala Ala
 10 15 20 25
 tcg tcg gcc gcc cat ggc tac ggc gcc tac ggc tac ggc gac gct gct 147
 Ser Ser Ala Ala His Gly Tyr Gly Ala Tyr Gly Tyr Gly Asp Ala Ala
 30 35 40
 gct gag ctc agg gtc ggg ttc tac aag gac tcg tgc ccg gac gcc gag 195
 Ala Glu Leu Arg Val Gly Phe Tyr Lys Asp Ser Cys Pro Asp Ala Glu
 45 50 55
 gcc gtc gtc cgc agg atc gtc gcc aag gcc gtc caa gag gac ccc acg 243
 Ala Val Val Arg Arg Ile Val Ala Lys Ala Val Gln Glu Asp Pro Thr
 60 65 70
 gcc aac gcg ccg ctg ctc agg ctc cac ttc cac gac tgc ttc gtc cgg 291
 Ala Asn Ala Pro Leu Leu Arg Leu His Phe His Asp Cys Phe Val Arg
 75 80 85
 ggc tgc gac ggc tcc gtg ctc gtc aac tcc acc agg ggg aac acg gcg 339
 Gly Cys Asp Gly Ser Val Leu Val Asn Ser Thr Arg Gly Asn Thr Ala
 90 95 100 105
 gag aag gac gcc aag ccc aac cac acg ctg gac gcc ttc gac gtc atc 387

Glu	Lys	Asp	Ala	Lys	Pro	Asn	His	Thr	Leu	Asp	Ala	Phe	Asp	Val	Ile		
				110					115					120			
gac	gac	atc	aag	gag	gcg	ctg	gag	aag	cgc	tgc	ccg	ggg	acc	gtc	tcc		435
Asp	Asp	Ile	Lys	Glu	Ala	Leu	Glu	Lys	Arg	Cys	Pro	Gly	Thr	Val	Ser		
			125					130					135				
tgc	gcc	gac	atc	ctc	gcc	atc	gcc	gcc	agg	gac	gcc	gtc	tcg	ctg	gcc		483
Cys	Ala	Asp	Ile	Leu	Ala	Ile	Ala	Ala	Arg	Asp	Ala	Val	Ser	Leu	Ala		
			140				145					150					
acc	aag	gtg	gtg	acc	aag	ggc	ggc	tgg	agc	agg	gac	ggc	aac	ctc	tac		531
Thr	Lys	Val	Val	Thr	Lys	Gly	Gly	Trp	Ser	Arg	Asp	Gly	Asn	Leu	Tyr		
	155					160					165						
cag	gtg	gag	acc	ggc	agg	cgg	gac	ggc	cgc	gtg	tcc	aga	gcc	aag	gag		579
Gln	Val	Glu	Thr	Gly	Arg	Arg	Asp	Gly	Arg	Val	Ser	Arg	Ala	Lys	Glu		
	170				175					180					185		
gcc	gtc	aag	aac	ttg	ccg	gac	tcc	atg	gat	ggc	atc	cgc	aag	ctc	atc		627
Ala	Val	Lys	Asn	Leu	Pro	Asp	Ser	Met	Asp	Gly	Ile	Arg	Lys	Leu	Ile		
				190				195						200			
agg	agg	ttc	gct	tcc	aag	aac	ctc	agc	gtc	aag	gat	ctc	gct	gtt	ctc		675
Arg	Arg	Phe	Ala	Ser	Lys	Asn	Leu	Ser	Val	Lys	Asp	Leu	Ala	Val	Leu		
			205					210					215				
tca	ggc	gcc	cac	gcg	atc	ggc	aaa	tcg	cac	tgc	ccg	tcg	atc	gcc	aag		723
Ser	Gly	Ala	His	Ala	Ile	Gly	Lys	Ser	His	Cys	Pro	Ser	Ile	Ala	Lys		
		220				225						230					
cgg	ctg	cgc	aac	ttc	acg	gcg	cac	cgg	gac	agc	gac	ccg	acc	ctg	gac		771
Arg	Leu	Arg	Asn	Phe	Thr	Ala	His	Arg	Asp	Ser	Asp	Pro	Thr	Leu	Asp		
	235					240					245						
ggc	gcg	tac	gcg	gag	ctg	agg	cgg	cag	tgc	cgg	agg	cgc	agg	gac			819
Gly	Ala	Tyr	Ala	Ala	Glu	Leu	Arg	Arg	Gln	Cys	Arg	Arg	Arg	Asp			
	250				255				260					265			
aac	acg	acg	gag	ctg	gag	atg	gtg	ccg	ggg	agc	tcc	acc	gcg	ttc	ggc		867
Asn	Thr	Thr	Glu	Leu	Glu	Met	Val	Pro	Gly	Ser	Ser	Thr	Ala	Phe	Gly		
			270					275					280				
acg	gcc	tac	tac	ggc	ctg	gtc	gcg	gag	cgg	agg	gcg	ctc	ttc	cac	tcc		915
Thr	Ala	Tyr	Tyr	Gly	Leu	Val	Ala	Glu	Arg	Arg	Ala	Leu	Phe	His	Ser		
			285					290					295				
gac	gag	gcg	ctg	ctc	agg	aac	ggg	gag	acc	agg	gcg	ctc	gtc	tac	cgc		963
Asp	Glu	Ala	Leu	Leu	Arg	Asn	Gly	Glu	Thr	Arg	Ala	Leu	Val	Tyr	Arg		
		300					305					310					
tat	agg	gac	gcg	ccg	tcc	gag	gcg	gag	ttc	ctc	gag	gaa	ttc	ggg	gag		1011
Tyr	Arg	Asp	Ala	Pro	Ser	Glu	Ala	Ala	Phe	Leu	Ala	Glu	Phe	Gly	Ala		
		315				320					325						
tcc	atg	ctc	aac	atg	ggc	agg	gtg	ggc	gtg	ctc	acc	ggc	gcc	cag	ggg		1059
Ser	Met	Leu	Asn	Met	Gly	Arg	Val	Gly	Val	Leu	Thr	Gly	Ala	Gln	Gly		

Phe Val Asn
355

345

350

<210> 34
<211> 1391
<212> DNA
<213> Zea mays

<220>
<221> CDS
<222> (103)...(1089)

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gtacccagca gcagctagca ctagcagtcc atcgagcgca cg atg gtg aga agg 114
Met Val Arg Arg
1

acg gtg ctg gcg gcg ctg ctg gtg gcc gcc gcc ctc gcc ggc ggc gcg 162
Thr Val Leu Ala Ala Leu Leu Val Ala Ala Ala Leu Ala Gly Gly Ala
5 10 15 20

cgg gcg cag ctc aag gag ggg ttc tac gac tac tcc tgc cca cag gcg 210
Arg Ala Gln Leu Lys Glu Gly Phe Tyr Asp Tyr Ser Cys Pro Gln Ala
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Glu Lys Ile Val Lys Asp Tyr Val Lys Ala His Ile Pro His Ala Pro
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Asp Val Ala Ser Thr Leu Leu Arg Thr His Phe His Asp Cys Phe Val
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Arg Gly Cys Asp Ala Ser Val Leu Leu Asn Ala Thr Gly Gly Ser Glu
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Ala Glu Lys Asp Ala Ala Pro Asn Leu Thr Leu Arg Gly Phe Gly Phe
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Met Gly Ala Gly Ile Arg Val Leu Ala Ala Leu	
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Leu Ala Ala Leu Ala Ala Ala Thr Ala Gly Leu Thr Ala Gln Leu Arg	
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Gln Asp Tyr Tyr Ala Ala Val Cys Pro Asp Leu Glu Ser Ile Val Arg	
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Thr Ile Arg Leu Phe Phe His Asp Cys Phe Val Glu Gly Cys Asp Ala	
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Cys Ala Asp Ile Leu Ala Leu Ala Thr Arg Asp Val Ile Glu Leu Ala	
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Cys	Ala	Phe	Leu	Asn											
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